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Worldwide Report

ENVIRONMENTAL QUALITY

No. 347

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ASEAN TO LAUNCH ENVIRONMENTAL PROTECTION PLAN

Islamabad THE MUSLIM in English 3 Mar 82 p 4

[Text] BANGKOK, March. 2: The five-member Association of South East Asian Nations (ASEAN), in South Asian countries and 23 Pacific islands have launched programmes to fight pollution of their environment.

A spokesman for the United Nations Environment Programme (UNEP) office here said Asian countries (Singapore, Malaysia, Thailand, Indonesia and the Philippines) had contributed 172,000 dollars to an Anti-Pollution Trust Fund for the East Asian Seas.

UNEP will contribute 200,000 dollars to the plan, including half for the Trust Fund.

ASEAN has also formed a co-ordinating body to implement the plan launched early this year.

Sri Lanka, India and Maldives recently spearheaded anti-pollution activities by ratifying the 10-nation Southeast Asia co-operative environment programme in Colombo, UNEP officials said.

A joint environment programme for the South Pacific also underway.

Under the eastern seas action plan, each ASEAN country will implement projects for which it is best equipped.

National Environment Board of Thailand will make oceanography studies while the Marine Science Centre of the University of the Philippines will assess the effects of pollutants on fisheries, mangroves and coral reefs, and the effects of harmful practices such as dynamite fishing.

Malaysia's Fisheries Research Institute in co-operation with Singapore and Indonesia will initiate research to identify least toxic chemicals that can be used to disperse oil spills in the Malacca Straits.

The Oil and Gas Technology Development Centre of Indonesia will monitor oil pollution and survey pollution sources.

The Geneva-based UNEP Regional Sea Centre will co-ordinate the activities of ASEAN's East Asian Seas action plan.

The programme of the South Asian countries are aimed at better management of the environment in the Indian Ocean, particularly by ending the wasteful use of precious natural resources on which the region's economic development depends.

Siri Lanka, India and Maldives have launched the programme, but UNEP officials said Bangladesh, Burma, Iran, Pakistan as well as land-locked Afghanistan, Bhutan and Nepal were expected to join it.

Three main bodies will implement the programme. They are the Governing Council (Policy-Making Body), the Consulative Committee and the Secretariat in Colombo.

Iran will have the job of setting environmental quality standards and initiating wildlife conservation programmes while India will undertake education and training in wildlife management.

Pakistan will focus on conserving mountain ecological systems and watersheds, and Bangladesh will study the preservation of Mangrove forests.

Sri Lanka will co-ordinate programmes to assess the cost and benefits of environmental measures while Afghanistan will deal with forestry.

UNEP helped 25 far-flung island territories and countries in the South Pacific launch their first joint programme against pollution two years ago.

Reports on their environment had shown serious problems of pollution. These included nuclear wastes through weapons testing and fresh water pollution.

UNEP officials said the highlight of this programme would be the first conference on human environment in the South Pacific to be held this month in the Cook Islands.

The conference is expected to adopt an action plan to continue assessment of the South Pacific environment.

It will also map out management procedures suited to local conditions, and proposes national legislation and regional measures for effective environmental management.

CSO: 5000/5718

FOREST CONSERVATION PROJECT FOR KAREN STATES

Rangoon THE WORKING PEOPLE'S DAILY in English 22 Mar 82 pp 1, 4

[Text]

PA-AN, 19 March—A meeting to co-ordinate measures for conservation of forests in Karen State was held at the Karen State People's Council here on 17 March.

The meeting was attended by Karen State People's Council Chairman U Saw Aung Pwint and Executive Committee members, Township People's Council Executive Committee members, Head of the Karen State Forest Department U Tha Hla, the Karen State Timber Extraction Manager and heads of Township Forest Departments from seven townships.

Following the speech by the chairman of the meeting U Kyaw Sein, the Chairman of the Karen State People's Council said that a project for keeping the forest in Karen State ever green and their conservation was drawn up by the Karen State People's Council Executive Committee under the guidance of the Party Regional Committee. The project was sent to townships and township authorities drew up detailed township-wise projects based on the local geographical conditions. He urged those present at the meeting to discuss and forward suggestions on the project which would be implemented beginning 1982-83.

The Chairman of the Karen State People's Council pointed out that forest covers more than 7.5 million acres in Karen State. So long as the forests could be conserved and kept green, the land would be fertile and the weather would be temperate and favourable for cultivation of crops. He called for all-out efforts of the personnel concerned for successful implementation of the forest conservation project.

The Head of Karen State Forest Department made a speech. Heads of Township Forest Department from Kawkareik, Kya-in-seikkyi, Papun, Pa-an, Myawaddy, Hlaingbwe and Thandaung Townships and members of the Township People's Council Executive Committees in charge of agriculture, meat/fish and forest, forwarded suggestions in discussing the project.

Karen State People's Council Executive Committee member U Saw Nyunt Tin and the Head of the Karen State Forest Department clarified points raised during the discussions and resolutions were passed.

The chairman of the meeting gave a closing speech.—*NAB*

CSO: 5000/5721

CALCUTTA TO IMPLEMENT POLLUTION CONTROL PLAN

Calcutta THE STATESMAN in English 20 Mar 82 pp 1, 7

[Text] THE Calcutta Metropolitan Development Authority has suggested the creation of an independent water and air management and control organization for the Calcutta metropolitan district to save the area from what its environmentalists call an impending ecological disaster. Such an organization, it feels is urgently needed since the environmental problem has already reached saturation point and further deterioration would seriously threaten human habitation in the 1,368-sq-km metropolitan area.

The Authority has warned that if the present unplanned urbanization and industrialization of the area continues, then by the year 2001, when the metropolitan district would have a population of more than 15 million, its environmental problems would be beyond control.

To counter this the environmentalists of the CMDA have prepared a long-term Rs 326-crore plan for environmental pollution control, which will be implemented in phases between 1982 and 2001. They have stressed the urgency for early implementation of the plan as, according to them, the problem can still be controlled. The plan has given top priority to pollution control in Calcutta and Howrah and to protection of raw water sources for the metropolitan area's community water supply.

The plan points out the organizational weaknesses of the present pollution control bodies in West Bengal and suggests the setting up of a separate water and air control management authority exclusively for the metropolitan area having proper legislative and financial backing. The organization will regulate the use of both surface and ground water and discharge of industrial and domestic wastes.

The operating cost of the programme, according to the plan, will be met by imposing taxes on polluters as well as beneficiaries of the programme. The Centre also will have to finance the programme since the metropolitan area is in the lower reaches of the Hooghly.

The plan refers to the Hooghly's water quality near the intake points of seven water works (including two which are under construction) and says that bacterially the river is "too polluted" to serve as a water source for public use. According to experts, the bacterial load of the Hooghly, is rising at such an alarming rate that in a few years no amount of chlorination will make its water safe for drinking. The magnitude of the pollution was threatening the existence of the waterworks on the river. They pointed out that since the Hooghly-Bhagirathi river system was the only major source of water for human use in south Bengal, its continued pollution would be disastrous for the entire basin.

Referring to the river's extremely high bacterial load, they said that it had given rise to a high-chlorine economic problem in the Calcutta metropolitan area. The chlorine dosage at the waterworks was being proportionately increased with the rising bacterial load and this had resulted in soaring water treatment cost. Already the problem had become difficult with 270 mgd that were now being withdrawn for public drinking purpose. It is felt that the problem will become more acute when the quantum is raised to 700 mgd by 2001.

Estimates suggest that at the turn of this century the discharge of waste water will be 420 mgd, contributing 1.6 million pound of biochemical oxygen demand (BOD) a day. Experts said that unless proper methods for treatment of sanitary and industrial wastes were adopted the river would be severely polluted.

The CMDA plan has recommended conversion of service privies into low cost sanitary latrines which will prevent the flow of a large volume of domestic wastes from a vast unsewered area of the metropolitan district into the river. It has also urged the removal of khatals from the metropolitan area and herding khatal cattle into the four cattle sheds now nearing completion. The CMDA feels that if these two measures are taken Hooghly's water quality would improve significantly and the high water treatment cost would be substantially reduced. The plan also calls for disinfecting and shifting of waste channel outfalls from the vicinity of the water intake points on the river.

The plan has suggested that to help industries to take pollution abatement measures appropriate and inexpensive waste treatment technology be evolved and sold to industries for compliance. The pollution control authorities may group several industries and arrange to take control measures through a combined treatment plant. The industries would have to pay for use of this plant according to their pollution load.

For air pollution control the plan has suggested that the manufacture of smokeless fuel be financed and encouraged by the Government for slum dwellers' use. Supply of this fuel could substantially reduce the smoke nuisance in the metropolitan area. The plan calls for a proper land use policy and has suggested that no new factories be set up near residential areas. Compulsory increase in the stack height of all chimneys, emitting gases, must be strictly enforced. Industries which throw air pollutants, like particulate matters of metal dust, should install precipitators and purifiers. Industries which lack resources should be helped financially to install the equipment. The plan has also called for extensive plantation of trees in the metropolitan area and correcting defective exhaust of automobiles.

The first phase of the pollution control programme starts next year.

CSO: 5000/7046

AMENDMENTS TO AIR POLLUTION CONTROL BILL DEBATED

Christchurch THE PRESS in English 26 Feb 82 p 2

[Text] Officers policing clean-air zones should be given right of entry to private residential properties, the Canterbury United Council said in a submission to the Parliamentary Select Committee on the Clean Air Amendment Bill.

The bill tightens controls on pollution.

The Institute of New Zealand Health Inspectors said policing officers needed access to make sure that clean-air zone orders were being complied with, but only when they had reasonable cause to suspect that prohibited or unauthorised fuel-burning equipment or fuels were being used.

Under the Clean Air Act, powers of entry are granted officers on to industrial and trade premises for these reasons.

Ivon Watkins-Dow, Ltd, opposed the power given in the bill for enforcing officers to take photographs on a site. Unjustified disclosure of information in the photographs could harm companies, and penalties were not high enough to discourage this. Investigating officers should be allowed only to "request" photographs.

Several submissions asked that installation and sale at retail and wholesale levels of unauthorised fuel-burning equipment and fuel be made an offence.

At present, offences are confined only to the "use" of unauthorised equipment in a clean-air zone, and only the retail sale of unauthorised fuels.

The Canterbury United Council objected to the deletion of "burning in open spaces" from the definition of fuel-burning equipment. While "smoke" and "best practicable means" of reducing pollution were controls to some degree, fires in the open would be harder to control as a result, the council submitted.

The fertiliser company criticised the strict liability now placed on occupants of premises from which excessive pollution was emitted unknowingly. Genuine human error and wilful interference with plant were not permitted defences.

It also objected to powers given investigating officers to shut premises when an imminent danger to health was suspected.

This was totally unacceptable. An officer could never have sufficient knowledge to shut down a plant and leave it in a safe condition. There was also no requirement for an officer to identify himself.

The Centre for Environmental Studies, Tasmania, said that the promised Government subsidies towards local authority clean-air schemes was a breakthrough. Local authorities, although they were empowered to make grants towards conversion of equipment, rarely had the funds, unless ratepayers were unfairly levied in relation to ratepayers not in clean-air zones.

CSO: 5000/9067

PAKISTAN

LEGISLATION URGED TO FIGHT ENVIRONMENTAL ABUSE

Karachi MORNING NEWS in English 29 Mar 82 p 9

[Article by Lionel Andrades]

[Text] Cows feed on garbage strewn on the roads, bushes surround a school that is falling apart, a man breaks a part of a bridge and makes it the entrance to his home, in Karachi.

It is apparent that poor circumstances can make one have to accept poor standards of living. Until a city can collectively become numb to severe environmental conditions. And then a stage is reached when their values are conditioned by the environment and they feel at home in sub human conditions.

This week the approval of the Environment Protection Ordinance has been a significant development, perhaps historic, in the country.

Legislation against environmental abuse may soon become a reality. The agency that will enforce the legislation is expected to see that uniform standards of regulation for pollution control will be applicable to the industries in Karachi, notably.

Aside from marine and air pollution by industries the agency could hopefully enforce legislation that discourages individual spread of pollution on the streets.

There is legislation in some countries that discourage the random disposal of garbage. In the UAE cars are not only checked if they are maintained well but the last date they were painted is also confirmed.

Legislation to check the rate of carbon monoxide emitted by vehicles is supported with the availability of special instruments that check vehicle exhaust pollution.

Plastic bags are sold at a nominal rate in countries where it is unlawful to dispose of garbage not contained in bags and not thrown at garbage dumps.

If similar legislation is enacted here perhaps people will cease to throw rubbish from the top floor of their tenement houses. Also people may then be concerned at the sight of dirt on street where they live, because of a possible fine.

The right to a clean environment; the right to adequate conditions of life in an environment that permits a life of dignity and well being seem like words that have a poetic charm but contain a message that cannot be implemented by most Karachites.

CSO: 5000/5714

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

AFFORESTED SHELTERBELT FUNDS--Yinchuan, March 26 (XINHUA)--The central government will allocate 40 million yuan this year for a 7,000-kilometer afforested shelterbelt from Heilongjiang Province in northeast China to Xinjiang Uygur Autonomous Region in the northwest, according to the shelterbelt construction bureau. The bureau said one million hectares will be planted with 2,500 million saplings, focused in 190 counties across 11 provinces and autonomous regions, deserts and loess highland. Known as a "great green wall," the shelterbelt's construction began in 1978 and 300 million yuan have so far been spent by the central government to cover three million hectares and establish nurseries on another 330,000 hectares. The bureau said they hope to complete the entire project's first phase by 1985. Supplemented with local funds, those in shelterbelt areas are planting hilly areas and sandy land with both timber and fuel trees, forming windbreaks on fields and pastures, the bureau said. Hebei and Liaoning Provinces and the Inner Mongolia Autonomous Region sowed 1,370 hectares by plane last winter, using a newly developed technique of wrapping seeds in a small ball of mud, the bureau said. The forestry department hopes this year to link the shelterbelts established in the previous four years, said the bureau. [Text] [OW261420 Beijing XINHUA in English 1218 GMT 26 Mar 82]

CSO: 5000/2092

NATURAL POLLUTION IN LAGUAN LAKE

Cebu City VISAYAN HERALD in English 5 Mar 82 pp 5, 11

[Article by Michael A. Bengwayan]

[Text] LOS BANOS, Laguna--(DEPTHnews)--It will take sometime--probably beyond year 2000--to develop Laguna Bay as hub of agro-industrial browth capable of supporting a population density of 14 million.

Main reason for this, as pinpointed by the Laguna Lake Development Authority (LLDA), is the increasing pollution caused by excessive nitrogen inflow and aggravated by effluents from nearby industrial plants.

No less than the LLDA general manager, Brig. Gen. Amado M. Santiago, admitted that little has been done to abate pollution in the lake.

Suprisingly, he said, excessive nitrogen from natural elements, more than chemical refuse from factories, is causing the deterioration of the lake's ecology.

Natural elements coming from domestic and livestock wastes comprise 70 percent of the nitrogen that is deposited into the lake. This nutrient and fertilizing agent of the lake's organisms causes excessive growth of algae, Santiago explained.

Although algae is the main food of fishes, it competes with the fishes for oxygen when too abundant. A result is what is known as "fish kills", a phenomenal case of nitrogen imbalance, leading to the death of thousands of fishes, Santiago added.

The 900-kilometer Laguna lake is considered the largest in the ASEAN region.

Earlier studies by the United Nations Environmental Program (UNEP) had pinpointed the lake as a centerpiece that can support a high population density and agro-industrial growth in the next century, if properly developed.

"The presence of this large body of water makes the Laguna region one of the few areas in the Philippines potentially able to support a concentration of population (14 million) and industry of the size projected for the year 2000 with a supply of abundant fresh water at a resonable cost," the agency said.

Aside from pollution of the lake, resources also are underutilized, according to LLDA.

For instance, only 41 percent of the 18,925 hectares of surounding farms is irrigated during wet season and only less than 29 percent is planted to rice in the dry months when the water gets brackish and unfit for irrigation.

The small fishermen around the lake are not benefitting much either because of the bent of big entrepreneurs to monopolize the commercial fish farming areas. Already, some 5,000 had been fenced and reserved as fishpens by these bigtime operators. As a result, the small fishermen could barely eke out a living from the available areas.

Santiago cited saline waters from the sea and toxic substances from the Pasig Riber as added constraints on the development of Laguna Lake's rseources. These enter the lake when water levels are low.

Such backflow occurs normally because the lake is only one meter higher than Manila Bay. Laguna lake was actually a portion of Manila Bay, Santiago explained.

Sedimentation, on the other hand, is a welcome development. Alluvial deposits, in the long run, become farmlands because of urbanizatino. But it will soon be necessary to undertake reclamation of the shallower portions of the bay, Santiago said.

CSO: 5000/5719

MEASURES PROPOSED TO HALT BANGKOK SINKING

Bangkok THE NATION REVIEW in English 12 Mar 82 p 1

[Text] A package of measures will be tabled to the Cabinet next month to prevent Bangkokians from pumping groundwater and save the city from sinking beneath sea level, Secretary General of the National Environment Board Kasem Snidwong na Ayudhya said yesterday.

Kasem, accompanied by Science, Technology and Energy Minister Wing Commander Thinakorn Bhandhugravi, told a press conference that many areas in Bangkok have been sinking to an alarming level and "the city will definitely be under the sea water in the next few years if we leave the problem untouched."

In Bangkok, he said, the city plan has never been implemented to control the construction of buildings and the volume of water consumption in the city has been on the rise for its population increases by 5-6 per cent every year.

The Metropolitan Water Works Authority has limited capacity in supplying tap water to consumers and it has also been the biggest consumer of groundwater - the major resource that maintain the level of land, he pointed out.

The NEB secretary general said the daily total consumption of groundwater from artesian wells by industrial factories and housing projects is about 1.3 million cubic metres--the volume that is above the capacity of groundwater from other areas to flow to the zones where water is pumped from beneath the ground.

And this caused the land to subside, he said, adding that the surface subsidence was mostly in bowl shape.

He indicated that the NEB, after years of research and study, divided sinking areas in Bangkok into three categories based on their seriousness.

The most critical areas are Phrakanong, Bangkapi, Huay Kwang, Phrapadaeng on the east side of the Chao Phya River, district community areas in Samut Prakarn and industrial zones in Minburi-Lardkrabang-Bangpli where the sinking level is more than 10 centimetres annually.

The second critical zone where land subsidence rate has been recorded at 5-10 centimetres annually includes Bangkhen, Dusit, Phyathai, Pathumwan, Bangrak and Yannawa. The level of groundwater in these areas has also dropped very sharply.

The third critical zone, with an annual rate of surface subsidence below five centimetres, covers areas besides the first and second zones in Bangkok and three outlying provinces of Nonthaburi, Pathum Thani and Samut Prakarn.

Kasem said the NEB which has seriously studied the issue proposed that substitute water sources had to be found to prevent people from digging artesian wells and using groundwater.

The National Economic and Social Development Board has been assigned to study the details with two alternatives - water from the Mae Klong River will be taken for consumption by digging canals to switch the water direction or using water from the Pasak River, he added.

It will take years and high investment for both alternatives but it's time the government invest for this, he said.

He continued that an urgent plan had also been mapped out to prevent the first and most critical zone from sinking by discouraging people from using water from artesian wells.

One of the proposed measures is that consumers will have to pay for groundwater, he said.

He said the measures mapped out by the NEB would possibly be submitted to the Cabinet next month for its decision.

CSO: 5000/5718

FORESTS TO BE GONE IN 21 YEARS: ESCAP REPORT

Bangkok BANGKOK POST in English 14 Mar 82 p 3

[Article by Imtiaz Muqbil]

[Text]

THAILAND'S forest areas, being depleted at the approximate rate of 1.4 million hectares per year, will be completely wiped out within 21 years, according to the regional arm of the United Nations.

Thailand and Indonesia, where the deforestation rate is 1.5 million hectares per year, are suffering from the most extensive pace of forest depletion in all the 44 member countries of the UN Economic and Social Commission for Asia and the Pacific.

An ESCAP report, released last week, said Malaysia had the highest percentage rate of deforestation and risked losing its forests in 12 years. The Philippines, with a 14 per cent rate of destruction, would lose its forests in 14 years and Sri Lanka in 19.

The report said that forests were being cut down by shifting cultivators, people who wanted to put up settlements, wood-cutters or commercial logging companies. Variously, the destruction was the result of population pressures and commercial loggers trying to meet a worldwide demand for timber.

Seventy per cent of the world's tropical wood exports originate from the Asian and Pacific countries, ESCAP said.

It said deforestation was leading to intensified seasonal flooding, water shortages in dry seasons, accelerated erosion of agricultural land, siltation of rivers and coastal waters and the disappearance of plants and animal species.

The report said all the countries were trying to remedy the problem but the programmes could not cope with the pace of destruction and their effectiveness was "very limited for various reasons."

It said that in Thailand, measures were being taken to reforest the areas with fast-growing species, resettle the hilltribes seen as bearing some of the responsibility for the problem and improving the soil conditions to prevent desertification of the denuded land.

The report also pointed to pollution of the seas as being another major problem and Thailand, the Philippines and Malaysia were cited as suffering from nearly every possible form of such pollution.

The name of Thailand cropped up with reference to the destruction of coastal mangrove areas to make way for urban development, industrial establishments and coastal mining, siltation of river mouths and coastal channels, pollution of inland and marine water, and wiping out of coral reefs.

"The Chao Phya river carries heavy loads of pollution, 70 per cent of which comes from domestic sources," the report said. "The presence of heavy metals has been reported in fishes and benthos. Though this generally below the safe limit for human consumption, the situation may not continue for long if the present trend of marine pollution prevails."

The report also cited figures of the National Environment Board as showing that Bangkok's air, polluted by the presence of more than half a million vehicles, contained between 1.39 and 32.4 parts per million of carbon monoxide concentration, well above the safety standards of nine parts per million.

In Bombay, air pollution was found to consist of 38.4 per cent carbon monoxide, 33.4 per cent sulphur dioxide and 9.8 per cent nitrogen oxides.

Seventy five per cent

of Manila's eight million people do not have potable water and 90 per cent of its homes are not connected to sewers.

Forty per cent of Japan's rivers, lakes and seas do not meet the environmental standards. One river in Tokyo and another in Osaka were found to be polluted with cyanide, the report said.

And what is being done about all this ? Precious little, according to the report, indicating that most of the countries involved were big on proposals but short on action.

"Very few" countries have ratified international conventions on prevention marine pollution, it said. Governments have talked about the need to monitor and study the pollution levels, exchange information and expertise on combatting them and set up regional training centres and action plans but little has been done to follow them up.

The five-member countries of ASEAN have set up an environment programme that will give special attention to oil pollution control, waste management and information exchange.

In spite of the poor situation, the report said, ESCAP felt the future prospects for combatting the problems appear "bright." This, it said, was because people were beginning to understand the nature of the problem, laws were being enforced to combat it, training was being enhanced and national programmes have been enacted to stop environmental destruction.

Still, the report admitted that the results of these programmes, many only recently promulgated, would take several years to become apparent.

CSO: 5000/5718

NEW NATIONAL CONSERVATION COMMITTEE TO BE ESTABLISHED

Bridgetown ADVOCATE-NEWS in English 10 Mar 82 p 1

[Text]

The Parks and Beaches Commission and the Barbados Caves Authority are to be merged to become the National Conservation Commission.

Mr. DeLisle Bradshaw, Minister of Housing and Lands, while moving a Bill in the House of Assembly yesterday to revise and consolidate the law relating to public parks and beaches, said that it was discovered that the functions of the two bodies were somewhat similiar and as early as 1977 Cabinet decided that the two authorities should be amalgamated.

The Minister added, however, that it was not possible to seek Parliamentary approval which would see the repealing of the two Acts since Cabinet decided that until Harrison's Cave in St. Thomas was opened it would not be necessary to proceed with the measure.

Mr. Bradshaw said that the National Conservation Commission will have wider functions than at present obtained under the Caves Authority and the Parks and Beaches Commission.

Its responsibility will include some of the functions and responsibilities currently undertaken by the Barbados National Trust.

"The problem or concern of conservationists and preservationists over the question of preserving sites or places of architectural interests or national monuments will now be taken care of", the Housing and Lands Minister said.

Mr. Bradshaw said Government was very interested in the environment and the maintenance of the environment.

He added that the Town Planning Department already had the power to insist that some places remained of historic importance. And he added that there were regulations which forbade destruction of some of these "older places".

The Minister noted that Government last year passed the Tree Preservation Bill which was another step towards conserving the natural beauty of the country.

"Our heritage ought to be regarded by all of us as something very dear to our hearts", Mr. Bradshaw said.

He noted that the St. Kitts Government, for example, was spending large sums of money in preserving one of its foremost historical monuments, Brimstone Hill.

Mr. Bradshaw said that the Bill for the establishment of the National Conservation Commission also empowered the Minister of Housing and Lands to declare any building, which, in Government opinion, was considered to be of historical appeal or importance, to be preserved.

He stated that the Bill also made provision for the maintenance of access to public beaches, one of the features missing from the previous Acts.

He said the Commission had the power to clear from public parks and beaches derelict objects.

The Minister said that Barbadians must understand that if tourism was to continue to survive then we must preserve as much of our historic buildings as possible.

He said that, at the moment, there was a feeling among some people that the organisation currently looking after the preservation of buildings of historic interest, was concerned only with buildings in which some eminent person lived or had been associated with.

Mr. Bradshaw pointed out that there were also some villages with much historical appeal and said he would like to see the new Commission taking note of these.

CSO: 5000/7522

ECUADOR

DROUGHT THREATENS FORESTS IN MANABI PROVINCE

Quito EL COMERCIO in Spanish 15 Mar 82 p A-1

[Excerpt] The alarming drought that has hit the Manabi area was foreseen as part of the period considered critical which the coastal region would have to endure until the year 2000. The phenomenon is forcing governmental authorities to work out a resettlement program in order to relocate a large part of the population in areas in the country with a brighter future, technical analyses show.

It has been estimated that in order to meet its food needs in the year 2000, Ecuador will require 3,205,000 hectares, which means that the current agricultural frontier will have to be expanded by some 1,662,400 hectares.

And yet, because of the irresponsible cutting of forests, increasing at an annual rate of 4.5 percent, the country could find itself without trees within 22 years, which would mean a rapid disappearance of forest resources and danger to the country's ecosystem and development.

The phenomenon of the drought -- the lack of rainfall has resulted in expansion of the country's desert -- began during the second quarter of this century and the government tried to solve the problem through irrigation systems. However, the process was slow and the drought conditions became alarming by the 1960's. The worst impact on agriculture and the people was in 1963 and 1968, during which years real research was undertaken in order to study the phenomenon and seek solutions.

Once again, the drought has struck rural areas and is wiping out livestock, according to reports from Manabi. The government is showing its concern and has allocated 250 million sucres for an emergency drought plan in order to reduce its effects and calm the fears of Ecuadoran farmers.

As is always the case, Manabi Province has been the hardest hit by the natural phenomenon, to such a point that the nearly 400,000 hectares in the area could be lost because of the lack of rain. Economically speaking and with respect to its water resources, Manabi is not a uniform region. Precipitation plays the most important role in the zone's water conditions.

11,464
CSO: 5000/2079

REPORT ON VOLCANO ERUPTION

Population Displaced

FL052330 Mexico City NOTIMEX in Spanish 2312 GMT 5 Apr 82

[Text] Pichucalco, Chiapas, 4 Apr (NOTIMEX)--More than 300 people were trapped when a small hill collapsed in the town of Cardona when the Chichonal volcano erupted again at 1400, a town resident reported. Mr Victor Manuel Alvarez said that the people who were able to escape asked for help from the municipal president of Juarez, Chiapas.

The eruption was preceded by strong tremors that alarmed the residents of the towns near the volcano but the Chiapas and Tabasco governments issued releases urging residents to stay home because emigration to the city of Villahermosa [capital of Tabasco State] was continuous. In addition, the Mexican Army was distributing food to the families who remained in the area. People continue to pour into Villahermosa. They are being lodged in more than 16 shelters, including the town's casino, the Tabasco Crea [expansion unknown], the sports center, olympic stadium, federal schools and child care centers.

Volcano Continues

FL051310 Mexico City NOTIMEX in Spanish 1905 GMT 4 Apr 82

[Dispatch by Carlos Cesar Espinoza]

[Excerpts] Pichucalco, 4 Apr (NOTIMEX)--This morning at 0522, the Chichonal volcano erupted for the fourth time with a heavy rain of ash. National defense secretary Felix Galvan Lopez ordered the evacuation of the inhabitants of this town, which is the aid center for area victims. At Ixtacomitan, a town some 20 kms from here, there was a heavy rain of small stones, not more than 4 cm in size.

The governors of Chiapas and Tabasco, Juan Sabines and Leandro Rovirosa, respectively, as well as defense secretary Felix Galvan have stated that the two states' inhabitants today lived "a critical but lucky day," inasmuch as this new eruption has caused no deaths or injuries. For their part, a group of volcanologists studying the characteristics of Chichonal have indicated that the situation is critical but there is no cause for alarm.

According to the experts, there is a possibility the volcanic activity will cease within the next 15 days, due to the fact that so far Chichonal's behavior has been similar to that of the Paricutin more than 40 years ago.

CSO: 5000/2089

BRIEFS

VOLCANO DAMAGE REPORT--Pichucalco (Mexico), 11 Apr (EFE)--The Mexican Government increased its plans to help the victims of the eruption of "El Chichon" volcano 13 days after it erupted and the army continues its relief activities. Mexican President Jose Lopez Portillo ordered the implementation of a program to help the victims and to relocate them. For this reason, he assigned $33 million for the agencies that will coordinate the relief operations for the area affected by the eruption. Lopez Portillo will visit the affected region for the second time in 2 weeks today. This region is located on the border between Tabasco and Chiapas states. According to official reports, the toll so far is 20 people killed. The reports issued by the authorities also indicate that 70 people were injured and approximately 150,000 are homeless. According to these reports, the soldiers are involved in guarding the towns abandoned near "El Chichon" to prevent robberies. According to volcano experts involved in research operations in the area, no towns can be reestablished there in a radius of 10 km, where the following towns were located: Nicapa, Francisco Leon, Tanchichal, Xochimilco, Cambac, Tumbac, Vicente Guerrero, Guadalupe Victoria and Guayabal. [Excerpt] [PA120216 Madrid EFE in Spanish 1946 GMT 11 Apr 82]

CSO: 5000/2095

ALGERIA

PROBLEM OF WATER PIRATING EXAMINED

Algiers EL MOUDJAHID in French 18 Mar 82 p 4

[Article by A. Belkhodja: "Hydraulics--How Long the Pillaging?"]

> [Text] In a period of drought, strict priorities are ordered --specifically, that the population's drinking-water needs and the needs of agriculture and industry have to be met (agriculture means the areas included in the national production plan, and not marginal areas which are generally leased to a swarm of wheeler-dealers attracted by the easy money to be made off watermelons and muskmelons each season).

For some years now, there has been a phenomenon that is taking on alarming proportions--the illegal pumping from the watercourses that feed the dams, which are intended for supporting sizable land areas and making them productive. This situation involves in particular the wilayas of Tiaret, Saida, Mascara and Mostaganem.

This year, because of the drought that the country is going through, an interministerial circular (Interior, Agriculture, Hydraulics) takes up the problem and sets out the measures to be taken to combat the illegal irrigation being done upstream from the water reservoirs and at the expense of the farming being done in the classified areas. These measures, which we shall review below, are aimed at safeguarding the sizable investment represented by the hydraulic infrastructure and productive capital (livestock and arboriculture). Because of the magnitude of the investments and the objectives set in this area, the illegal pumping for secondary crops, such as watermelons and muskmelons, for example, cannot be ignored.

In a period of drought, strict priorites are ordered--specifically, that the population's drinking-water needs and the needs of agriculture and industry have to be met (agriculture means the areas included in the national production plan, and not marginal areas which are generally leased to a swarm of wheeler-dealers attracted by the easy money to be made of watermelons and muskmelons each season).

During the seasons with heavy precipitation, and after evaluation of the needs and of the reserves, the surplus volume is naturally allocated to the small peasantry. But this policy of social promotion and economic development must not be jeopardized by the practice of leasing, by this same small peasantry, of of parcels to persons foreign to agriculture. It goes without saying that this situation, which has taken on certain proportions in the last 5 years, does serious harm to agriculture. We note, though, that an interministerial circular stress that the illegal tapping will have to be considered, criminally, as theft of water. It specifies that in addition to legal proceedings for theft of water and injury to third parties, sanctions will have to be taken--in particular, confiscation of the equipment used and of the agricultural production.

Analogous measures were taken in 1978, in the daira of Relizane, without achieving any tangible results. "Cops and robbers" has continued to be played since then. Application of the measures announced should be firmer, and a certain hesitation that has sometimes engendered a situation of blockage, a sort of status quo, should be overcome in each of the four wilayas concerned. The "tolerance" noted in one of the wilayas has been seen to spread, which has often resulted in the absence of forceful measures against the illegal irrigation. Nevertheless, the principal victims indisputably remain the wilayas of Mascara and Mostaganem, which cover large areas, especially in the dairas of Mohammadia and Relizane.

The watercourses that feed the main reservoirs are situated in the wilayas of Saida and Tiaret. Oued El Abd, for example, traverses the wilayas of Saida, Tiaret and Mascara. As for "Mina," an important watercourse, it traverses the wilayas of Tiaret, Mascara and Mostaganem.

In application of the central directives, injunctions were served on those living along the "Mina" in the wilaya of Tiaret, informing them that drawing-off of water is henceforth strictly prohibited. In this same wilaya, a commission has been set up and is regularly holding working meetings to develop and apply an action program. This commission groups the Ministry of Justice, the UNPA [National Union of Algerian Peasants], the administration of the wilaya, and the ministries of Agriculture and Hydraulics. Here, rigorous application of the measures ceaselessly urged and suggested by they Hydraulics services is stressed. In addition, and with a concern for effectiveness, initiation of the operation is to be simultaneous everywhere in the four wilayas. To put it simply, if one wilaya applies the directive totally, the others owe it to themselves to act likewise and not to permit things to go along in the same old way and tolerate illegal drawing-off of water for reasons that one is ignorant of.

In the wilaya of Tiaret, those living along Oued El Abd are presently farming some 1,000 hectares of irrigated land. Those of the "Mina" are farming a little more than 400 hectares, while Mohammadia, Sig and Relizane cover sizable areas totaling more than 30,000 hectares. A greater interest is consequently taken in these regions. We mention, in this regard, that the irrigation area of the Relizane plain has always drawn its water from the Bakhada dame, built in the wilaya of Tiaret in 1936 and located some 120 kilometers from Relizane.

The Bakhada dam's theoretical capacity is 50 million cubic meters, a capacity that diminishes every year because of silting. At present, the dam holds 32 million cubic meters of water. Apart from the silting, water is pirated upstream and downstream from this important reservoir, which, in addition to irrigation, supplies water to the localities of Mecheraa, SFA [as published], Rahouia and Djilali Ben Amar. The city of Tiaret and its industrial zone will also be supplied from Bakhada, which will supply 600 liters per second.

As is known, the Tiaret region has suffered from low rainfall and drought effects since 1973. This situation has not prevented water drawoffs from proliferating, though. Indeed, there has already been overexploitation of the "Mina" wadi for several years, characterized by anarchic and uncontrolable irrigation by those living along it.

The Watermelon Magnates

So long as there was lots of water available, this irrigation was more or less authorized, but to safeguard the irrigable areas, these drawoffs of water were prohibited. However, despite this formal prohibition against pumping, people continued to do it, until in 1978 the "Mina" wadi in the wilaya of Tiaret was completely dried out.

Here too, it should be noted that certain small peasants established in the region are the direct farmers of the irrigated areas only to the extent to which they rent their lands to a category of persons attracted by the profits to be made from speculation in watermelons and muskmelons in particular.

It is obvious that the speculators profit from clandestine use of water to the detriment of the classified areas, which over the years have declined tragically, as was the case with several self-managed arboricultural areas in the daira of Relizane in 1980. Oued El Abd and Oued Al Abtal, upstream from the Fergoug and Bouhanifia dams, were also completely dried up. Is it right simply to wait in the face of a phenomenon that is constantly growing, seriously threatening the classified areas? How long will the pillaging of water be permitted? The damage that the irrigated areas have suffered and are still suffering can now be estimated. Distress signals were sent out in 1979 in Relizane, where several self-managed farming operations are powerlessly witnessing the decline due to a lack of water that is mainly the result of this pillaging.

The year 1979 is a "reference year," for the speculators made a drive toward the water and therefore toward the irrigated lands. Not an inch of land was spared; the earth is battered. The watermelon magnates take over the land, hardly content with the areas bordering the "Mina" and extending them on either side of the wadi. They rent several parcels at a time and "go all out." In other words, "the big better is the big winner." The most flabbergasting situations have been experienced at Relizane, despite several attempts aimed at limiting the damage caused by proliferation of water drawoffs, a pillaging that accentuates the effects of the drought and lowers the reserves.

The Relizane area is irrigated by the Essaada dam, placed in service in 1978. The capacity of this important facility is on the order of 235 million cubic meters, and such a dam promises great outlooks for farming development and irrigation in the region. For the time being, Essaada is taking over from Bkhada and as of mid-March was storing 50 million cubic meters. It is intended to supply water to the 17,000 hectares of farmland, 10,000 hectares of which are classified.

The present reserves are said to be sufficient to maintain the area--obviously, if they are not "punctured," as has been reported elsewhere.

But downstream from the Essaada dam, the diversion of water by motor-driven pumps whose throbbing is heard day and night is already being deplored.

Pirate Pumping

When Spring comes, the "Mina" is subjected to abusive exploitation. The Hydraulics administration has always found itself at grips with the pillagers of water. The farming area's needs are estimated daily, with a margin for loss and evaporation, and instructions are then given to the managers of the Essaada dam to release 3,000 liters per second. A few moments after the valves are opened, one notes that 1,000 liters per second "vanish into thin air." They are quite simply sucked off by dozens of pirate pumps connected to pipelines that are quite long. This, of course, is to the detriment of the legitimate recipients. While the effects of the drought are obvious, one cannot, the way we are looking at things, impute lack of water to the tolerated drawoffs, but neither would it be necessary for these drawoffs to have an abusive character [as published].

It should be stressed also that when the rainfall is low or nil, an order of priorities is established, and permission to draw off water upstream and downstream from the dams is no longer granted. Otherwise they would be to the detriment of the water supply for the population, the classified farming areas and industry.

Despite injunctions served on those who live along the wadis, who are only "stand-ins," many case of repeated offenses are noted. At Relizane, equipment has been confiscated on several occasions; but if it is given back, a complacency is signified that destroys the effect intended by the forceful measures. In March each year, the activity on both banks of the "Mina" becomes feverish.

The activity is less intense this year, we are told. Preparations are being made nevertheless, as is customary, before the soon-to-come startup. In the daira of Relizane, all arrangements have been made to counter a phenomenon that is lasting too long, and also to remove the obstacles that prevent the regulations in force from ahcieving their purpose, and finally to put an end to the very cunning behavior of the offenders.

In several cases, the pumps are loaded onto and operated from vehicles (trucks or vans). This mobility keeps them from being caught in the act, for at the approach of a patrol, pumping is stopped and they go off peaceably. Others push their effort and investment to the point of installing big pumping motors on cliffs, inaccessible and obviously requiring suitable means and equipment for confiscation of them. Others, finally, lay full-fledged irrigation systems, the cost of which is beyond the capacity of the small peasant who owns the parcel and which amounts to a disguised purchase of the parcel, which produces huge profits from the growing of watermelons and muskmelons.

Some Measures--But...

At Relizane, no water-drawoff permits were issued at the beginning of this March. A commission set up in November 1981, under the chairmanship of the daira chief, is responsible for managing the resources of the "Mina." Other commissions are operating at the commune level.

Forty kilometers from Relizane, at Mohammadia (wilaya of Mascara), the water shortage is felt very sharply. Rainfall was not abundant this season. For the plain of Habra, there is not just one misfortune. The salinity of the soils--a phenomenon that has persisted for several years--is devouring the roots, and salt is being deposited on the surface. Because of lack of drainage, very little water serves for irrigation and therefore for the survival of arboriculture. The cleaning of the surfaces affected by the salinity is proving difficult, precisely because of the lack of water.

In this daira, a large-scale operation is being carried out and is proceeding at a satisfactory pace. It involves the reconditioning of an initial area of 10,000 ha [hectares]. The project involves the drains' being put back into service and the plain's finally being rid of the waters with high salt content.

Until 1977, Mohammadia had no serious problems with irrigation, but since then, the reserves have been dropping. In 1978, for example, the area received 30 million cubic meters of water, corresponding to 40 percent of the needs. In 1979 and 1980, only 50 percent of the needs for irrigating some 12,000 ha were met.

The outcome obviously depends on rainfall, to make it possible, on the one hand, to build up the water reserves, and on the other, to redevelop the plain. Thanks to elimination of the salt, this year in the daira of Mohammadia, in view of the scarcity of water and the imperative restrictions in irrigation, several market-garden operations have faded out [as published]. The production plan seems to be disturbed both at the level of the socialist-sector and Agrarian-Revolution farming operations and at the private-sector level. Thus, 70 to 80 percent of the artichoke plantings for which investments were granted have been wiped out. This is also why all irrigation for crops of this type has been suspended, with a view to preserving the classified and equipped areas involving citrus and oil-producing arboriculture in particular. These constitute further reasons for making a responsible choice by putting an end to the draw-offs of water for secondary crops--specifically, watermelon and muskmelon, which require large quantities of water. We have been told that parcels used several times running for watermelon-growing produce poorly. That is why certain private parties do veritable prospecting of this kind to find virgin lands, precisely because they are fertile. The speculators are already in the field, but they are acting discreetly, not to say in the shadows.

Silting of the Dams

The "Mina," whose source is in the wilaya of Tiaret, is exploited both upstream and downstream from the Bakhada and Essaada Bakhada [as published] dams, which are situated within the territorial limits of the wilaya of Tiaret. It constitutes what could be called the lifeline of the Relizane plain until the Saasa dam builds up sufficient reserves over the years, and depending on the clemency of nature. Last year, for example, there was a "discharge" of 20 million cubic meters from Bakhada to the benefit of Essaada. Did this volume arrive safely? Only the pirate pumpers can say.

The Bouhanifia dam, intended mainly for arobriculture, constitutes the principal reservoir for irrigation of the Mohammadia area. Its initial content was on the order of 75 million cubic meters, but it has been reduced to 50 million cubic meters by silting. As for the Fergoug dam, it offers 10 million cubic meters available, its initial capacity having been 17 million. Silting is the area's No 1 problem.

Following the recent precipitation, the two dams are reported to contain, as of mid-March, 27 million cubic meters (capacities that are well below the needs of the population, agriculture and industry). Because of this situation, irrigation has been subjected to sharp restrictions that affect 84 CAPRA [Agricultural Production Cooperatives of the Agrarian Revolution], 7 CAPAM [War Veterans Agricultural Production Cooperatives], and a multitude of small peasants. As this Spring begins, only 16 million cubic meters of water are available in reserves, whereas the needs are estimated at 76 million. The shortfall is enormous. Orchards require 6 irrigations per year, each of 5,000 to 6,000 cubic meters per hectare. But in recent times it has been necessary to limit them to only 1 or 2 irrigations--3,000 cubic meters of water per year per farm, which is very slim. If these restrictions are imposed downstream from the reservoirs, one should not be passive about the pumping being done upstream from the reservoirs. Pirate pumping? Authorized pumping, the subdivision chief of Hydraulics of Mohammadia corrects us, with a hint of irony, explaining that these officially prohibited but discreetly tolerated drawoffs of water diminish the reserves.

Indeed, the clandestine or semiclandestine pumpings limit the possibilities of safeguarding the maintenance of the classified areas. At Mohammadia, drawoffs of water downstream from the dams have just been prohibited by decree. It is up to the wilayas of Saida and Tiaret to coordinate action to prevent, or at least limit, the harm done.

In the wilaya of Mascara, a dam is under construction--Ouizet. It will have a holding capacity of 100 million cubic meters. The Habra plain is counting a great deal on this facility, which will not only compensate for the chronic deficit but will also open up broad possibilities for development and food supply.

Last year, 398 hectares were assigned to authorized irrigation, from the "Mina," in the wilaya of Tiaret. As for the pirate branchings, they watered 207 ha farmed by two farming estates, a few CAPRA's and 83 private parties, the majority of whom are actually lessees of parcels who have come from different places to "conquer the wadi," to promote the growing of watermelons and muskmelons.

The pumping was done at will, since it is established that crops of this type require abundant water--i.e., an average of 10,00 [as published] cubic meters per hectare.

Oued El Abd, whose source is in the wilaya of Saida, traverses a part of the wilaya of Tiaret and joins the "Mina" at Oued El Abtal in the wilaya of Mascara. A thousand hactares are farmed and irrigated by this watercourse. Last year the administration limited the authorized irrigation, having found itself faced with a fait accompli because the farmers had made preparations. But were all means of control used for making sure of the application of such a measure?

Concerted and Simultaneous Action

At Saida, the wadi of the same name and Oued El Abd for an appreciable reserve for feeding the dams of Mohammadia and Relizane. In this wilaya, we are told that the pirate pumpings are not so numerous as in the other wilayas, notably along the "Mina" wadi. Nevertheless, injunctions have been issued, formally prohibiting the installation of water take-offs. A watercourse police force is ready for action, assigned to patrol the watercourses and apply the measures set out in the interministerial circular--measures that will be mirrored in a wilaya decree being prepared.

In this wilaya, people have become aware of the problem. Indeed, it is considered that in past years water drawoffs have been done anarchically and in a disorderly manner and have gone beyond the limits of tolerance. This situation could not go on if strict measures were taken simultaneously by the officials of the various wilayas concerned. It is noted that each wilaya that experiences or suffers this phenomenon has been operating exclusively on its own within its territorial limits, without being concerned about its neighbor's opinion. We are told, however, that the situation is now tending to improve.

This year, indeed, there has been greater harmonization of the actions of the wilayas concerned. The meeting of the directors of hydraulics of the western part of the country, held in Oran at the end of 1981, has been followed by a series of meetings organized at the level of the dairas and wilayas affected by the problem. The most recent one was on 2 March, but unfortunately it was not possible to bring together all the agriculture and hydraulics officials of the wilayas of Mostaganem, Mascara, Tiaret and Saida. This cycle of meetings has the task of bringing things up to date in the matter of management of hydraulic resources and of setting precisely the quotas to be drawn off for drinking-water supply and for meeting the needs of the other sectors.

The merit of this coordination is first of all that it makes it possible to join efforts in order to carry out simultaneous action--action that will be decisive in application of the measures decreed against the water drawoffs considered illegal.

The restricted exploitation of the "Mina," the area's source of nourishment for several consecutive years, is an example that amply satisfies us with regard to the harm caused. It is clear that the measures decreed do not run counter to promotion of the small peasantry but rather counter to the speculators, these magnates of the watermelon and the muskmelon, this class of persons who profit from the precariousness of the small peasants' resources in order to obtain parcels on a lease basis. It is a matter of eliminating a phenomenon characterized by the search for base profit to the detriment of the national interest and of the small peasantry, who profit only from the morsels of paternalism thrown to them by the parasites.

11267
CSO: 5000/5011

FINANCE MINISTER PROMISES AID FOR DROUGHT

Johannesburg THE CITIZEN in English 25 Mar 82 p 14

[Text] Steps to provide drought relief would be taken by the Government as soon as the Jacobs Committee investigating the situation had made its report, Mr Horwood said.

After last year's bountiful crops and generally favourable agricultural conditions, South Africa was now experiencing increasingly serious drought conditions in certain areas, he said.

As in the case with producers in other sectors of the economy, the farming community was faced with rising input costs, including the high cost of money.

Apart from hardship to farmers affected, this combination of factors would adversely affect the country's food production potential--at least in the short run--and that was a serious matter for the country as a whole.

Mr Horwood said that he and the Minister of Agriculture and Fisheries and other colleagues had been present when the president of the SAAU had called on the Prime Minister recently to report the latest position.

"And I can attest to the constructive and sympathetic discussions which took place," he said.

"The Government lost no time in referring the matter to the Jacobs Committee for urgent study and report.

"As soon as the committee's recommendations are received, steps will be taken for the relief of what is plainly a serious situation, subject only to the financial means at the Government's disposal.

"Since the extent of financial assistance required still needs to be determined, funds for this purpose are not provided for in the estimates, but will, in any case, be made available at the right time," said Mr Horwood.--Sapa.

CSO: 5000/5713

EVACUATION OF CATTLE FROM DROUGHT-STRICKEN PROVINCES REPORTED

Salisbury THE HERALD in English 20 Mar 82 p 1

[Text] Bulawayo--The Cold Storage Commission has transported about 10,000 cattle by train from Matabeleland and Victoria provinces to Mashonaland since the exercise to move livestock from drought-stricken areas began about four weeks ago.

A CSC spokesman said in Bulawayo yesterday that at least 600 cattle were moved at a time from the two provinces to various parts of Mashonaland.

Some were sent to abattoirs, some to feed-lots and others to farms where they were to remain until the next rainy season when it was hoped they would be brought back.

He said the figure did not reflect the complete picture because some commercial farmers had made private arrangements with Mashonaland farmers to move their cattle.

The official could not say exactly how many more cattle the CSC would move to Mashonaland. It was "quite probable" that commercial farmers would sell 10,000 before the exercise was over and the communal land owners "something like 70,000," bringing the total to about 90,000 to be moved by the CSC alone.

Asked if the number of cattle the CSC will have because of the drought would affect the price of meat, the spokesman said: "The price we are paying to commercial farmers is being renegotiated. The Government will probably say something about it next month.

"We are always looking at the supply and demand aspect of the beef industry to maintain a constant supply. It is most likely that butchers will buy cattle cheaper shortly because of the large supply, but as the year draws towards the end, there is likely to be a shortage of cattle, and the price of beef may rise again."

He said the CSC's priority was the local market, which must always be well-supplied.

CSO: 5000/5713

FARMERS URGED TO SELL CATTLE BEFORE STARVATION

Salisbury THE HERALD in English 23 Mar 82 p 3

[Text] The president of the National Farmers' Association of Zimbabwe, Mr Robinson Gapara, has appealed to farmers to sell older cattle before they die because of grass and water shortages.

Speaking at a field day at Pasipamire village near Enkeldoorn yesterday, he said: "Places like Ndanga, Bikita, Nuanetsi, Belingwe, Shabani and other areas of Matabeleland have cattle which are already dying."

He also appealed to farmers to form co-operatives. "By working together you will probably triple your present produce and it will be easier for you to get more aid."

Speaking at the same village, the co-ordinator of literacy, Mr Stephen Karume, said he would visit the district's 18 wards recruiting voluntary workers to teach adult education.

Training

The teachers, drawn from school-leavers, nurses, teachers, extension officers, the police and the general public, would be sent on a five-day training course.

Mr Karume would also urge people of the district to form study and project groups. Project groups would be taught farming, cooking, poultry-keeping, carpentry, building and gardening.

Speaking at Nyahunzi, near Sipolilo at the weekend, an Agritex official for the area, Mr Moses Chigariro said commercial and peasant farmers should increase their agricultural output to create jobs.

Mr Chigariro has visited a cotton-growing demonstration at the Gatooma Cotton Research Station, where he saw 10 varieties of cotton which had been grown on one hectare of land.--ZIS.

CSO: 5000/5713

FISHERMEN PROTEST DUMPING OF CHEMICAL WASTE IN ELBE

Hamburg DER SPIEGEL in German 15 Mar 82 pp 86, 88, 89

[Article: "By the Pants"]

[Text] Elbe River fishermen protest officially authorized pollution of the environment: Dow Chemical Works is allowed to put 6 tons of poison into the Elbe every day.

At the end of last year officials of the Kiel Ministry of Agriculture drafted a 15-page paper for their boss Guenter Flessner in which they described--"confidentially"--"various kinds of polluting of the Elbe River."

The internal document was delivered not only to the addressee. In a roundabout manner the paper was slipped to those who are hardest hit by the river pollution: the last fishermen on the Elbe River.

What they found to read struck them as sensational: The Dow Chemical Works in Stade on the Lower Saxony bank of the lower Elbe is putting "about 2 tons of chlorinated hydrocarbons per day" into the river, and according to the notice of approval it may pump as much as 6 tons per day.

Last week for 29 hours the fishermen blockaded the chemical company's ship landings with 9 cutters as a protest against the officially authorized flow of poison. Then, according to the spokesman Heinz Oestmann, they finally had Ernst Albrecht (CDU), the responsible minister president, "by the pants": Albrecht agreed to negotiate with the fishermen prior to the election in Lower Saxony next Sunday.

The anti-Dow demonstration is the fourth sensational action by which the Elbe fishermen are reacting to the progressive pollution of the river, which is increasingly pressing them to give up their occupation. When last year officials issued a prohibition on the sale of eels from the Elbe, which were contaminated with mercury, the fishermen twice blocked ship traffic on the Elbe with their cutters. In May approximately 50,000 environmentalists came to the largest protest action to date against the "stinking sewage canal"--motto: "Save the Elbe, now!"

But it is possibly too late for that. Because of embanking and deepening, industrial settlements and the introduction of waste waters from factories and communities in East and West Germany, the river, which around 1900 was still among the bodies of water in Europe richest in fish, has become a swamp.

According to the Lower Saxony Ministry of Agriculture "the Elbe is the main receiving stream for Central Europe." While in 1920 about 1,200 fishery vehicles provided 120,000 tons of fish from the Elbe to Hamburg, now just a dozen professional fishermen catch the up to 200 tons per year--primarily contaminated specimens which may not be sold because of the high toxicant level.

According to the most recent studies, 46 percent of the Elbe eels have more highly toxic mercury than is permitted by German health guidelines. Some 91 percent of the eels and 100 percent of all other kinds of fish, like perch, bream, roach, zander and smelt, show inadmissably high proportions of the pesticides hexachlorcyclohexane (HCH) and hexachlorbenzene (HCB). Environmental experts were alarmed mainly by the fact that the highest values for HCH and HCB (0.5 milligrams per kg of fish fat) have been exceeded by up to 10 times and more in 27 and 93 percent of all fish--an unprecedented environmental policy scandal, especially since these poisons are among the extremely dangerous chlorinated hydrocarbons which do not decompose for years.

The insecticide HCH and the plant pesticide HCB have been repeatedly identified in mother's milk also, transported via the food chain from the smallest organism to man. The substances, which accumulate in body fat, are under strong suspicion of damaging the liver and the nervous system, of causing cancer and deformities among newborns.

Since the confidential paper from Kiel surfaced, it is clear to the fishermen who are among the main parties guilty of poisoning the Elbe: the management of the factory in Stade, a subsidiary of the American poison producer (and occasional producer of napalm) Dow Chemical, and the Land politicians in Hannover who at the beginning of the 1970's were anxious for industrial plants at almost any price, paid scarcely any attention to environmental protection and since then have neglected to adapt the requirements of waste water quality to the level of what is technically possible.

Dow was located in Stade before the area was off limits as an industrial region and was allowed to build without a permit. The enterprise in fact was given the order to build a biological clarification plant, but it was not finished until 1 and one-half years after the start of production and even then continued to leave a great deal of dangerous filth in the waste water. The then chief construction official, Buenter Feist, complained to the Stade government president, that questions of environmental protection had simply "been mostly on the fringe of the negotiations for locating industry, in spite of all the assurances by the politicians."

Thus, it is no surprise that repeatedly explosions in the factory, in which several people were wounded, and countless outbreaks of poisonous gas, after which the Elbe occasionally had to be closed, again and again brought the company into discredit and the people living nearby into danger. Meanwhile the 1979 authorization, which has now been made public, resulted in a massive protest.

It is stated there that "chlorinated hydrocarbons on principle must not be introduced into the main canal"--unless there is no other way: Then, "the permissible daily load is limited to 6 tons per day." In the notice maximum amounts are spelled out for 31 different chlorinated hydrocarbons, including the pesticide HCB (0.05 milligrams per liter).

Of course, Dow, as the company promptly maintained, did not fully utilize the permitted amount of waste. In 1980, for example, 1 ton of chlorinated hydrocarbons was pumped into the Elbe each day, in 1981 just one-half ton per day. According to the government the chemical works "has received strict orders in respect to waste water purification," which "are in accordance with the level of technology."

But meanwhile for experts at the Berlin federal environmental protection office the "level of technology" is taken to mean the virtually total "removal of chlorinated hydrocarbons from waste water and exhaust gas;" a "degree of waste removal" of "over 99 percent" can be attained. Prerequisite: technical installations which Dow does not have--and which officials have never made a condition for the conglomerate.

Dow critic Oestmann fears that such an environmental policy will result in the total end of fishing not only on the Elbe. If there is no change, he said, "in 3 years the crab catchers along the coast will be affected and in 10 years all fishing in the North Sea."

12124
CSO: 5000/2080

LAND ENVIRONMENT MINISTER PREDICTS ACID RAIN FROM BEXBACH PLANT

Hamburg DER SPIEGEL in German 22 March 82 pp 52, 54

[Article: "Danger from Bexbach"]

> [Text] Sulfurous waste gas from a Saar power plant, which according to experts will pollute the Pfaelzer Wald [Palatinate Forest], is poisoning the atmosphere between the CDU-led governments in Mainz and Saarbruecken.

Whenever Rudi Geil, Rhineland-Palatinate minister for the environment, is asked about the biggest construction site of the adjoining Saarland, he shows frustration: "I am deeply disappointed."

Geil's mood has soured, because the Saarbruecken State Government wants to make the Rhineland-Palatinate people taste acid: Approximately 8,000 tons of sulfur dioxide per year from the smoke stacks of the Bexbach coal-fired power plant.

The Mainz Government is embittered, because even though the 750-megawatt plant near the two states' common border, which has cost DM 1.1 billion and which is to be put in operation in the fall of 1983, will be equipped with a 240-meter smoke stack, it will lack the latest desulfurization technology.

Experts fear that whenever there is a westerly wind, the stinking waste gas from Bexbach will be blown into the Hunsrueck forests and the Palatinate Forest and will come down in these regions, which are anyway highly endangered, in the form of acid rain. If this comes to pass, the "German Forest Protection Association" predicts for these regions large-scale tree destruction such as has been recorded for a long time in many other regions of Central Europe (SPIEGEL series, No 47-49, 1981).

The waste gases emitted by the 216 West German coal and mixed fuel power plants, barely a dozen of which are equipped with modern filter installations, are suspected of being a key factor in a situation, where in Central Europe all fir-trees, nearly 50 percent of the spruces, 65 percent of the pine-trees and--according to the information transmitted by forestry experts at a technical conference last week--all beech-trees in North Bavaria and in the Spessart have suffered damage.

Since a large part of the toxic gases that everywhere in the northern hemisphere are threatening the forests is blown in from the respective neighboring country, the acid rain has everywhere given rise to diplomatic action, e.g. between Montreal and Washington, Stockholm and Bonn, East-Berlin and Prague.

For the first time, the sulfur export has made clash two CDU-led federal states: Instead of the much-quoted interstate friendship, a strained atmosphere has been prevailing in the last few weeks between the Christian-Democratic government in Mainz and the CDU/FDP cabinet in Saarbruecken.

State Environment Minister Geil attacked in an unusually sharp manner Saarland's minister for economics, Werner Klumpp (FDP), who is responsible for the licensing of the power plant. In writing, Geil raised "strong objections" against the "regrettable decision," which he wants to bring up for discussion next Tuesday at a joint session of the two state governments.

With Klumpp's consent, the licensing agency has as early as 1978 permitted the plant owners to emit in Bexbach 850 milligrams of sulfur dioxide per cubic meter of waste gas. And it is this permit that the power plant operators are presently adducing in support of their position; as a result, only 72 percent of the fumes are to be desulfurized in a so-called lime washing installation, while the remaining 28 percent will be blown into the air with the approval of the authorities.

Thus the Bexbach Power Plant, whose furnaces have an hourly capacity of 255 tons of washed pit coal, will pollute the environment at a rate of approximately 2 tons of sulfur dioxide per hour of operation. The effects of acid rain on the Hunsrueck Mountains have been described in a study by the Mainz geo-ecologist Manfred Krieter:

"In the Hunsrueck Mountains, the acid rain and the aluminum and heavy metal deposits mobilized in the soil by the rain will in their entirety seep--via the groundwater--into the spring water. It is only a question of time at what point after the death of the surface waters the groundwater can no longer be used as drinking water on account of toxicological considerations."

Consequently, the Rhineland-Palatinate Government has urged its Saarland neighbors at least to reduce the emission of toxic waste gases to 650 milligrams per cubic meter. This waste gas limitation for coal-fired power plants exceeding 175 megawatts was agreed upon by the federal and state environment ministers on 8 February 1980.

Actually, one could accomplish still more. Even FDP-Klumpp concedes that a reduction of the sulfur content to 400 milligrams is "technically feasible." And Saarland's Environment Minister Guenther Schacht predicts: "In a few years, we will be arguing about 200 or 100 milligrams."

In fact, even today coal can be converted into electric power without any concomitant air pollution. Employing the so-called centrifugal stratification process, one can even construct power plants without smoke stacks; in such plants, the sulfur is converted by means of lime into calcium sulfate.

The centrifugal stratification process has been known for 50 years; due to lack of demand, however, it has only now reached the production stage. Consequently, a power plant of this type costs much more than a conventional plant--the main reason for the reserve the industrial sector has shown so far.

Of all places, it is the Saarland town of Voelklingen--a mere 35 kilometers off Bexbach--that presently is building--at a cost of DM 500 million--a centrifugal stratification power plant without smoke stack--the second such plant built in the Federal Republic. To be sure: The Federal Ministry for Research and Technology carries one-third of the construction costs.

Without the subsidy, the test project would be unprofitable, and for Saarland's Economics Minister Klumpp profitability takes precedence over environmental protection. For financial reasons, the alert politician, who in the early summer will give up his ministerial office in exchange for the financially more lucrative position of president of the Saarland Savings and Clearing Association (annual salary: approximately DM 240,000), is obstructing more effective environmental protection in Bexbach.

Klumpp's argument: If the toxic gas emission is reduced by as little as 200 milligrams--from 850 to 650 milligrams--the cost of the desulfurization installation will increase by DM 20 million, with an additional expense of DM 8 million per year. Says Klumpp: "Economically not justifiable."

Klumpp also points to the "competition pressure" exerted by the less expensive nuclear power from France--a warning that falls on fertile soil in the structurally weak and crisis-ridden Saarland with its high unemployment rate (9.6 percent). The construction of the Bexbach Power Plant is to safeguard 1,000 jobs in the mining industry, with 200 new jobs created in the power plant.

In Rhineland-Palatinate the politicians of the CDU and the SPD--ordinarily at odds with each other--have now formed a "strange alliance" (FRANKFURTER ALLGEMEINE ZEITUNG) against the government of the neighboring state: For example, Willi Rothley, district chairman of the Palatinate's Social Democrats, praises the "unequivocal stand" of CDU Environment Minister Geil and deplores Klumpp's "unbearable" sulfur policy.

The Federal Government, too, is involved in the environmental dispute on the Saar: It owns 74 percent of the Saarbergwerke AG [Saar Mining Works, Inc.], the enterprise in charge of the power plant project. If the plant's future operators keep defending the obsolete desulfurization installation, the Bonn shareholders will be confronted with difficult problems: Regarding the licensing of new plants, the guidelines concerning the Federal Law on Protection Against Industrial Emission of Noxious Substances express call for the "latest state of engineering."

Environmental protection activists are concerned about the possibility that the privately owned industry could follow the bad example of Bexbach and interpret the regulations concerning protection against industrial emission of noxious substances as nonchalantly as the Federal Government. "It makes a terrible impression," laments Kurt Rocker, president of the German Forest Protection Association in Rhineland-Palatinate, "when the state gives itself better terms."

The forest protectors also point out that sulfurous rain is harmful not only to the forests, but also to people's health: According to a study presented in 1977 by more than 200 U.S. scientists, the life expectancy of people living near coal-fired power plants is reduced by 1 to 15 years; in the United States alone, over 21,000 of such individuals die a premature death. The most frequent cause of death: Lung damage produced by sulfur dioxide, which--in combination with other noxious substances--is also suspected of causing cancer.

It certainly is no accident that in Saarland's high-density industrial region, where every day tons of toxic substances are blown into the air, more people presently die of lung cancer than elsewhere. "In the Federal Republic, we have a big lead," concedes Alban Schloz of Saarland's Ministry for Health.

In spite of all health- and environment policy-related considerations, Heinz-Guenter Wrede, spokesman of the Saarbergwerke AG, holds that intensification of air protection in Bexbach will be practicable only if others carry the "disproportionately high costs." Should that come to pass, scoffs Wrede, certain waste materials could be "shot to the moon."

8760
CSO: 5000/2083

BRIEFS

EEC ANTI-POLLUTION FINANCING--The EEC will finance (possibly up to 30,000,000 drachmas) studies for the fight against pollution in Athens. This is the first time that the EEC is participating in Greece in environmental protection programs, especially in the area of the capital. Negotiations between Minister of Urban Planning, Housing and Environment Tritsis and a delegation from the EEC's general directorate for the environment ended yesterday. A statement from the above Ministry announces that: "The country's environmental problems were discussed during the meeting and EEC financial participation in these programs has been agreed to in principle. The Ministry will submit the Greek government's proposals to the EEC by the Middle of April. The representatives of the European Community's Commission expressed their interest in the EEC's priority financial participation in the application of anti-pollution programs in Athens." [Text] [Athens TO VIMA in Greek 24 Mar 82 p 1]

CSO: 5000/5323

ENVIRONMENT AGENCY CHIEF: NEW PLAN BEING PREPARED

Stockholm DAGENS NYHETER in Swedish 26 Mar 82 p 20

[Article by Peter Sandberg: "Environment Chief Says Problems Are Worse, New Environment Plan on the Way"]

> [Text] Goteborg--"What we are working with today are problems resulting from decisions made in the 50's and 60's. The new problems which crop up tend to be worse and worse, and therefore the need for planning and foresight is greater than ever. In a couple of months we will present a program in which we will prioritize five areas," said Environment Protection Board chief Valfrid Paulsson in Goteborg on Thursday.

Valfrid Paulsson spoke to a seminar arranged by Goteborg's Social Democratic Party to honor the old local politician Torsten Henriksson, who worked for a long time with environmental affairs in the offices of the Environment Protection Board.

The problem areas which Valvrid Paulsson says are going to be prioritized are:
- acidification of earth and water,
- automobile exhaust and noise in the cities,
- chemicals dangerous to health and the environment,
- refuse and refuse disposal,
- depletion of natural areas.

Valfrid Paulsson said that environment protection is not a question of "satisfying friends of the environment." The interests of environment protection must be considered equal to other social interests.

Conflict

He said that it is not right to avoid conflict, because all activity involves conflict. As a typical example he spoke of the forest.

"Now and in the future, the forest is one of our most important raw material sources, and we have a social goal that the forest will give high production and be profitable. At the same time, however, the forest should be kept for recreational purposes. We want to avoid the use of coercion, and yet we order the forest owners to keep after leaf disease. We commit ourselves internationally to protect the wetlands, and yet we contribute to construction of drainage ditches," said Valfrid Paulsson.

"There are a number of concrete recommendations to improve our possibilities for supporting the environment. But that does not mean that we have an environment protection policy which is generally accepted.

"We lack a politically decided and generally accepted goal for the use of the forests and for environmental protection, and we will never have such a thing. It has to be decided whether it will be your ox or mine which will be sacrificed," said Valfrid Paulsson.

"In the same way, in area after area there are conflicts arising in the forests," he said. "We have to put up with this because of the ambivalence of the politicians (approving and disapproving of something at the same time) on these issues."

9287
CSO: 5000/2086

ENVIRONMENT GROUP ASKS TOUGHER RULES ON SULPHUR EMISSIONS

Stockholm DAGENS NYHETER in Swedish 26 Mar 82 p 20

> [Text] One-third of the sulphur pollution which Sweden emits annually lands on Swedish soil. The remainder about 200,000 tons, is "exported" abroad. Therefore there is reason to reduce Swedish sulphur emissions, according to the Swedish Society for the Protection of Nature in its program against pollution of nature.

This is one of our greatest environmental problems, according to the organization, which says that 18,000 Swedish lakes have already been damaged.

Primarily it is the use of fuel oil which increases pollution. Also, automobiles and new types of fertilizer cause a more acid environment.

In 1976 the Riksdag decided that sulphur emissions should be reduced by more than one-third. The first step has been a reduction of the sulphur content of fuel oil.

The goal is to have emissions which are the same sulphur intensity as in the 50's.

The Society for the Protection of Nature doubts whether this reduction is sufficient. Furthermore, most of the sulphur comes from abroad. A total of almost 400,000 tons of sulphur lands on Sweden each year.

The conclusion is that Sweden must increase its efforts to solve the problem.

Earlier investments in cleansing equipment, investment in energy management in homes, equipping all oil burners (not just the new ones) with smoke cleaning equipment, tax on high-sulphur oil, prohibition of coal burning in private furnaces and small heaters are some of the demands.

Increased Liming

Liming must increase, or alternatively agriculture must return to nitrate fertilizer which was mainly used before, and which does not acidify as much.

As to forestry, the pollution from forest fertilizer should not be a problem. The amount of deciduous trees should be increased, since these have the ability to reduce acidity.

On the question of forestry, the Society for the Protection of Nature comes into direct conflict with forest management, which fertilizes to increase growth, and which furthermore does not like deciduous trees because they tend to slow the growth of the economically better coniferous trees.

9287
CSO: 5000/2086

GOVERNMENT PROPOSES NEW RULES FOR BURNING OF COAL

Stockholm DAGENS NYHETER in Swedish 27 Mar 82 p 7

[Article by Thomas Michelsen: "Acids to be Reduced, New Rules Recommended for Burning Coal"]

> [Text] Now a new round is starting in the fight against acidification--Sweden's greatest environmental threat. The government recommends strict measures against sulphur in the smoke from coal-fired heating plants. Part of the costs for cleaning the smoke gases will be covered by increasing the cost of oil.

Furthermore, the grants for liming acid lakes will be increased, and this money will come from the oil account. Oil prices will increase by a total of 15 kronor per cubic meter, which will be the environmental tax on oil.

The government's acid proposal has already been criticized from two quarters. The coal interests, represented by the Swedish Coal Consortium, claim that the proposition places an extra cost of one billion per year on tenants. And, say the coal people, the environmental effect is barely noticeable.

The friends of the environment in the Society for the Protection of Nature are criticizing the government from the other side for not going far enough with its measures against sulphur emissions in Sweden. The emissions should, by 1990, be reduced to one-half of that which the government approves of, says the society.

Unexplored

Acidification is a global threat to the environment which was detected very late. The decisive discoveries were first made in Sweden in the 60's.

The most publicized destruction of the environment was the killing of the fish in the lakes. Today 18,000 of Sweden's 85,000 lakes have been found to be obviously acidified, and 3,000 more are threatened until 1990. The fish in one-tenth of Sweden's lake area are affected.

But acid has other, less discussed and probably more serious, results for the health of mankind, for ground water, for growth of the forests and for agricultural harvests.

But large segments of this rapidly growing environmental threat are still unexplored.

More Acid

Acidification is related to industrialization, to the continuously growing combustion of coal and oil. Since industrialization began the rain over southwest Gotaland has become 10 times more acid.

Acid rain clouds blow from country to country. An average of one-fourth of the sulphur which rains down over Sweden is of Swedish origin. Three-fourths blow in from Western Europe and England's industrial areas. In return, Sweden exports a large part of its sulphur emissions to Finland and the Soviet Union.

Acidification has therefore been a continuous theme at international environmental conferences during the 70's. It will be the main topic at the follow-up conference after the UN environmental conference which will be held in Stockholm in the summer.

Sweden is one of the countries which discovered acidification earliest and hardest, since our lime-poor soil gave so little protection against acid rain.

But in recent years West Germany has become concerned with the difficult consequences of sulphur rain. Large parts of the West German spruce forest have been seriously damaged by acid rain. It is probable that the aluminum in the soil, which is released by the acid rain, damages the roots.

Acidification has many causes, and the most important is precipitation of sulphur from the combustion of coal and oil. But the pollution which has grown the fastest in recent years in Sweden is the emission of nitric oxides, which come mainly from automobile exhaust gases.

Difficult Consequences

But earth and ground water are also acidified through spreading acid fertilizer in agriculture and forestry.

The new methods of forestry involving use of the entire tree, even the top and the branches, is going to increase the acid in the forest earth.

The government's proposal is going to require the larger coal-fired plants to clean the sulphur from their smoke gases. National contributions will be paid for the cleaning equipment. But this involves only large coal furnaces from 500-600 megawatts and above.

Medicine

The government's proposal for smaller heating plants contains an easing in relation to existing sulphur laws. They are allowed to emit more sulphur than is permitted today, until 1987. It is considered today to be impossible to buy coal with sufficiently low sulphur content.

The national contribution to liming of the lakes increases from 75 to 85 percent of the cost. But, says the minister of agriculture, liming is no alternative to reduced emissions. Liming is only a medicine which works temporarily and occasionally.

9287
CSO: 5000/2086

MEASURES FOR COMBATTING ANKARA AIR POLLUTION PROPOSED

Istanbul MILLIYET in Turkish 18 Jan 82 p 2

[Article by Master Engineer Fethi Komurcuoglu, former president of Fuels Office]

[Text] Air pollution in Ankara reached such dire proportions recently that compulsory measures were taken. Nevertheless, it is impossible to say that its ill effects on human health have been adequately prevented. This makes it worthwhile to examine the topic, propose radical solutions and inform the public.

It is necessary to stress that air pollution in Turkey is not unique to Ankara alone, but applies as well to Istanbul and our other industrialized cities.

Total lack of air pollution is impossible. Therefore, it is necessary to determine the level at which air pollution must be kept, that is, the maximum acceptable levels of the air pollutants--sulfur oxides, hydrocarbons, carbon monoxide, photochemical oxidants, nitrogen oxides, flourides and particulates--and to formulate and legislate standards specifying the conditions relevant to sources of pollution.

Thought should be given to three areas of control.

A. Control of industrial establishments.

B. Control of motor vehicles.

C. Control of fuels, related facilities and equipment.

A. Control of industrial establishments will begin with the process of industrial planning and identifying industrial zones. Special industrial zones should be designated in the cities and areas where natural conditions prevent dispersal and purification of polluted air, such as Ankara, for instance. The latest technical developments to reduce to a minimum the pollutants discharged into the air by factories should be envisaged within the discipline of projects. At this stage, it is a categorical necessity to prevent discharge into the air of toxic pollutants such as cadmium, beryllium and asbestos, which have a directly fatal effect on human health.

It is very important that urban industrial zones be designated in such a way as to allow prevailing winds to carry smokestack emissions away from residential areas. (For example, I think the organized industrial zone being developed in the Cigli district of Izmir should be reexamined from this standpoint.)

Motor Vehicle Control

B. Motor vehicle control includes control of hydrocarbons discharged from the crankcase, and hydrocarbons, carbon monoxide and other gas particulates discharged in the exhaust. The former should be totally prevented and exhaust gases should be kept below a certain limit. These controls should absolutely take place in traffic inspections.

The second issue here is the effect and control of fuel (petroleum) and its additives. For example, air pollution caused by tetraethyl lead found in gasoline occurs at no negligible level and the gasoline used should contain a minimum of it.

C. It would be appropriate to look at this area as control of the facilities where fuels are used and of the characteristics of equipment and fuels. Electricity-producing stations may be considered facilities and central heating, air conditioning, stoves, bakeries, etc. as equipment. It is necessary that the fuels to be used contain a minimum of pollutants or be free of them.

The sulfur and nitrogen oxides are the hardest to control. In fact, South African oils which contain very little sulfur are very expensive. The same holds true for coal.

Natural gas is the most suitable fuel as to low sulfur content and efficient burning.

Cleansing petroleum and coal of these pollutants is a very expensive process and it is agreed that the world has not been able to afford it to date. For this reason and bearing in mind the complex and varied aspects of air pollution, I think it would be optimistic to expect Ankara's air pollution problem to be solved by "lignites," the so-called "smokeless coal" being developed jointly by Turkey and Germany.

Natural Conditions in Ankara

Natural conditions in Ankara are very unfavorable. The city is becoming uninhabitable because the lack of air currents allows pollutants to remain in the air for long periods of time and their accumulation brings pollution to high levels. Housing has been and is being built without taking air pollution into account as regards location and urban planning and without taking the necessary measures. Industry has also been located in the city. An environment has been created making it very difficult to remedy these conditions. In seeking solutions, I think natural gas should be given priority as the fuel to be given principal consideration.

The use of natural gas as fuel has been designated by environmental experts as the most radical remedy for air pollution. Moreover, it is possible for it to be put into use at low cost by taking advantage of existing facilities such as coal gas utility lines and central heating furnaces. In this case, the coke that would be saved, as it would no longer be needed for the utilities, could be allocated to our steel industry, which has a large requirement for it.

In Barcelona, Spain, for example, natural gas is being used for both heating and industry for the same reason and has also been extended to Madrid. "Liquified natural gas" is imported from Libya and is refined at a gas refinery built on the coast.

As for the problem of supplying natural gas to Turkey, foreign experts with whom I have had the opportunity to be in touch have said that it is highly likely that natural gas would be found in Turkey. In fact, the discovery of natural gas in Thrace and the northeast in the course of oil exploration is proof of this and indicates that we should stress the search for natural gas, which is close in value to petroleum. Moreover, it is possible for us to obtain natural gas more favorably and economically than oil from Iran, Iraq and the Soviet Union and to obtain liquified natural gas from Libya.

It would be beneficial and money well spent to conduct a study of the matter, at least for Ankara and Istanbul to determine its feasibility.

Measures

What should be done to combat air pollution may be summed up as follows:

1. Determine levels of pollution and set pollution standards.

2. Put effective controls in place to ensure that permanent facilities comply with the standards.

3. Set maximum levels, that is, limits, for discharge into the air of each pollutant.

4. Learn the control technology of sulfur oxides and nitrogen oxides and ensure full combustion insofar as possible and minimum oxide formation.

5. Take the measures necessary to reduce corrosion to a minimum.

6. In energy planning, plan to make use of the least polluting primary energy sources.

7. Set up continuous controls to ensure compliance with the standards of motor transport vehicles gas emissions.

8. Formulate land use, urbanization and industrial zone planning so as to ensure minimum air pollution.

9. Keep in close touch with international organizations and the regulations, work and research of other nations, give priority to work and research that would contribute to these matters and cooperate at the most advanced level possible.

10. Write programs for all these matters according to the most modern methods and ensure through serious methods that these programs are realized.

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END

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Worldwide Report

ENVIRONMENTAL QUALITY

No. 349

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

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REDUCED PCB CONTENT IN BALTIC SEEN AID TO SEALS

Helsinki HUFVUDSTADSBLADET in Swedish 9 Mar 82 p 16

/Article by Raymond Arvelius: "Lower PCB Content Creates Hope for Seals"/

/Text/ "Extinction of the seals in the Baltic Sea has seemed inevitable. But in the last few years the level of the environmental poison PCB has dropped by one-third in the Baltic Sea and there is hope for the seals. Above all, the situation has improved for the newborn seals." This is what Lennart Almkvist says, a researcher at the National Museum of Natural History in Sweden.

The number of gray seals in the Baltic today is only 1,000, while there were 100,000 at the beginning of the 1900's.

For a long time hunting reduced the number of seals. But now the seals are protected and the threat to the seals in the last decades has come primarily from the environmental poisons DDT and PCB. Forty percent of the females have been affected by pathological abnormalities of the uterus. Only about 20 percent of the females bear young.

Certain Indications

"The most recent analyses of fat from eggs of the common guillemot show that the PCB level has dropped by one-third," Lennart Almkvist says. "These are certain indications, since the guillemot never leaves the Baltic and feeds on herring from various stocks of herring. As of 1981, the decrease of the PCB level has been statistically proven."

The level of DDT has also dropped. Lennart Almkvist is of the opinion that it is the Helsinki convention which is showing results.

All of the Baltic countries signed the convention, and one attempts to reduce the discharge of pollution both from land and from ships.

"If the seals are sterile, that is permanent," Lennart Almkvist says. "The newborn seals are in a better position."

"They start off with half of the mother's level of poison. To that are added the poisons contained in the mother's milk and later the contents in fish."

"It is probably PCB which interferes with the reproduction of the seals. Now, PCB has been somewhat reduced in the seals."

The researchers at the National Museum examine seals which have died. And this is why it takes time before sufficiently many males, females, young and old have been examined. Besides gray seals there are also ringed seals and hump seals in the Baltic.

"It could take 10 years or 100 years before 'all' seals are healthy, and we still don't know whether such a positive development will take place," Lennart Almkvist says.

Seals and Human Beings

The sterile seals are sick, and together with veterinarians at Uppsala University the researchers of the National Museum are studying the pathological picture. One is studying all the organs in detail: the uterus, liver etc.

The hormone system is affected by PCB and the uterus has grown together.

"But proving that the coalescence is due to PCB is difficult," Lennart Almkvist says. There are about 30 different substances in PCB.

Can human beings be affected by these kinds of effects?

"The human being is part of the interplay between the organisms and the environment, and in the end the human being can also get sick," Lennart Almkvist says.

"DDT is found in mother's milk, and humans and seals are physiologically similar. Physicians are doing a number of PCB analyses of fat samples from humans, but so far too little is known."

PCB was used in industry. The paint industry, for example, mixed PCB into their paints for boat hulls in order to give the paint the right smoothness. In this way PCB was spread all over the waters.

"PCB has now been banned in Sweden for about 10 years. But PCB is spread when burned at garbage dumps. It is carried away by the air. Technology and resources in order to remove all PCB do not exist today." (FLT)

11949
CSO: 5000/2078

VICTORIAN OPPOSITION SEEKS PROBE OF VINYL CHLORIDE LEAK

Other Studies Under Way

Melbourne THE AGE in English 4 Mar 82 p 5

[Article by Peter Roberts]

[Text] The Victorian Opposition has called for a full public inquiry into the leak of vinyl chloride gas from B. F. Goodrich's Altona chemicals factory last week.

Mr Evan Walker, Labor's spokesman on environment and planning, said yesterday that an inquiry would establish the explosion risk faced by nearby factories and residential areas during the day-long emergency.

He said it should also assess the cancer risk faced by factory workers and emergency officers who inhaled vinyl chloride gas on the site.

"If we win government at the coming election, we will be holding a public inquiry," Mr Walker said. "There is too much at stake in this incident for us to just breathe a sigh of relief and allow the matter to pass."

For about seven hours on Thursday, emergency services staff worked to plug a leaking pressure tank containing 600 tonnes of vinyl chloride. It was feared that sparks could ignite the escaping gas cloud and cause an explosion.

Mr Walker said this raised a question mark over planning policies which had allowed housing areas to encroach on Altona's chemical industries. The safety of the factories in the region should be re-assessed in the light of the Goodrich accident.

He said that there had been serious chemical explosions overseas and Victoria should take the Goodrich incident as a warning. The Altona situation was more complicated than normal, as many of the factories there also store intractable industrial wastes. It is believed that chlorinated hydrocarbons, chemicals considered too hazardous to dump, are stored in drums on the Goodrich site.

Mr Walker said scientific evidence now suggested that people exposed to the gas could face a higher than normal risk of cancer in years to come. This had not been obvious last week.

"A single significant exposure (to vinyl chloride) could have an effect," Mr Walker said.

A spokesman for B. F. Goodrich said yesterday that the company had no objection to any inquiry proposed by any government. He said inquiries were already under way within the company and within the Environment Protection Authority and the Ministry for Minerals and Energy.

"It is hard to see what else a public inquiry would produce," the spokesman said. "I guess we have got to have faith in authorities such as the EPA to present their various masters with a true picture of what happened."

The EPA is investigating the release of vinyl chloride during the incident. Under general air pollution provisions of the Environment Protection Act, the company could be liable to a fine of up to $5000.

The Minister for Minerals and Energy, Mr Crozier, said his department's hazardous materials division was considering safety question raised by the incident. He did not rule out tightening of safety procedures at Altona.

Mr Crozier said: "The Labor Party and Mr Walker are very fond of proposing inquiries into pretty well everything. I am satisfied that the facts will become known, and the report, I will be getting will be perfectly adequate."

Underestimation of Leak

Melbourne THE AGE in English 6 Mar 82 p 5

[Text] Concentrations of vinyl chloride gas in the air were at least three times higher than it had earlier been thought during the leakage from the B. F. Goodrich Chemical plant at Altona last week.

In its official explanation of the leak. Goodrich has said that concentrations at the perimeter of the plant reached 300 parts per million (ppm).

Company spokesmen previously had said that "average concentrations" during the day-long emergency were 10 ppm, with "isolated" readings reaching 100 PPM. Montoring devices were switched on after the gas had been leaking for about an hour.

Mr Norm Gamble, Goodrich's technical services group director, said the only potential explosive area would have been immediately around the leaking tank, which contained 600 tonnes of vinyl chloride.

The company investigation shows that the leak occurred when three fitters were changing a three-inch vinyl chloride discharge pipe at the base of the tank. The pipe also supported the actuator of the four-inch discharge valve.

Mr Gamble said that with the support removed, the force of gravity had been enough to rotate the valve handle towards the "open" position. Several unsuccessful attempts were made to shut the valve and the plant alarm bell was sounded 30 seconds after the leak occurred.

He said the leak was controlled at 7 pm when water was successfully injected into the storage tank.

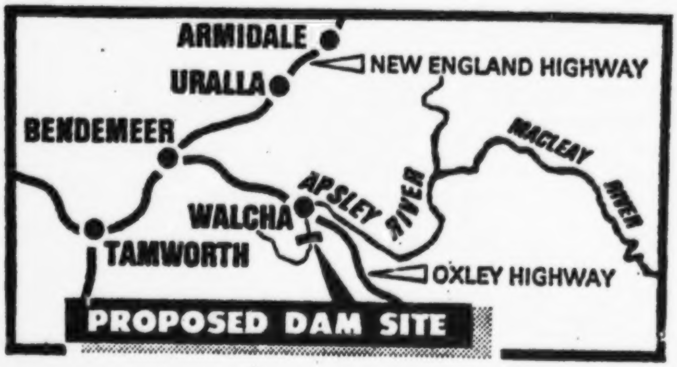
Two State Government departments are conducting inquiries into the incident.

CSO: 5000/7528

NEW DAM ROW IN NSW; PARKS ASSOCIATION IN OPPOSITION

Sydney THE SYDNEY MORNING HERALD in English 4 Mar 82 p 10

[Article by Joseph Glascott]



PROPOSED DAM SITE

[Text] A hydro-electric dam versus wilderness controversy, similar to the Franklin River issue in Tasmania, has developed on the northern tablelands of NSW.

The National Parks Association protested yesterday against a proposal by the Electricity Commission for a dam and power station on the Apsley River, east of Walcha.

The executive director of the association, Mr Peter Prineas, said the commission had installed a flow meter in the river late last year. The commission also had begun work with a bulldozer to turn a rough track into an access road.

He said the road work ceased when the association threatened legal action because the commission had not prepared an environmental impact statement, on damage to the wilderness.

Mr Prineas said the Apsley, a tributary of the Macleay, was a wild, scenic river in rugged gorge country on the edge of the New England tableland, east of Walcha and Armidale.

The Apsley River valley, and up to 70,000 hectares around it, had been identified in surveys as the third largest wilderness area in NSW.

The National Parks and Wildlife Service had been considering a proposal for a national park in the region for a number of years.

The service had been frustrated in its efforts to acquire land for a park, because it was required to announce proposed land purchases to give other Government departments an opportunity to object.

The Department of Mineral Resources had raised objections on the grounds that the valley could contain minerals.

The Electricity Commission, with no such requirement, had been able to buy property in the valley, he said.

Mr Prineas said a dam would flood the valley and destroy the wilderness values of the region.

"The proposed dam does not make economic sense," he said. "It is planned to use power to pump water from the Apsley River dam up to a storage on the tablelands, and then drop it down again to produce power in the State's peak demand periods.

"Overall the project would probably be a net user of power.

"I suspect that another main reason for the dam is to pump water up into the Gunnedah basin to supply the proposed new coal mine developments in that district."

A spokesman for the Electricity Commission said the Snowy Mountains Engineering Corporation had been engaged to carry out feasibility studies for a dam and hydro power station on the Apsley.

A decision would not be made about the project until these studies were completed at the end of this year.

At that stage the commission would prepare an environmental impact statement. Already a team from New England University had been commissioned to carry out a survey of flora and fauna in the valley.

The proposed power station would produce about 500mw for peak period loads, and could be enlarged to provide an additional 1000mw.

CSO: 5000/7528

URANIUM DUMP POSES DILEMMA TO NSW; SA REFUSES TO HELP

Sydney THE SYDNEY MORNING HERALD in English 4 Mar 82 p 10

[Article by Joseph Glascott]

[Text] Efforts to remove the radioactive waste dump in Nelson Parade, Hunters Hill, appear to have defeated the State Government.

It is now thinking of leaving the dump where it is, covering it over and perhaps putting a park on top.

A spokesman for the Minister for Health, Mr Brereton, said yesterday a decision was expected soon.

The dump of 3,000 tonnes of contaminated soil has been a problem for the Government since 1976.

In that year the Health Commission discovered that the waste was giving off radon gas and gamma radiation levels which were potentially dangerous to health. The land was the site of a factory between 1910 and 1916 which extracted uranium from uranium oxide for painting luminous watch faces.

The contaminated waste is spread over six housing blocks. Three of the blocks were so contaminated that the Government agreed to buy the houses and remove the soil from under them.

The Government has bought two of the houses and is still negotiating for the third.

However, attempts to find a site to which the radioactive waste could be removed have proved futile.

NSW asked South Australia where the uranium oxide was mined in the first place to take the waste back, but the SA Government refused.

Two years ago the Health Commission selected a site for the waste at Manara in the remote western districts of NSW between Broken Hill and Ivanhoe. But local graziers and Central Darling Shire Council raised strong objections and the commission was forced to drop the idea.

No decision had been reached yet on what to do, but one option was to leave the soil where it was, cover it over and provide a park on top.

Government sources said the issue was so difficult it had gone to State Cabinet for discussion.

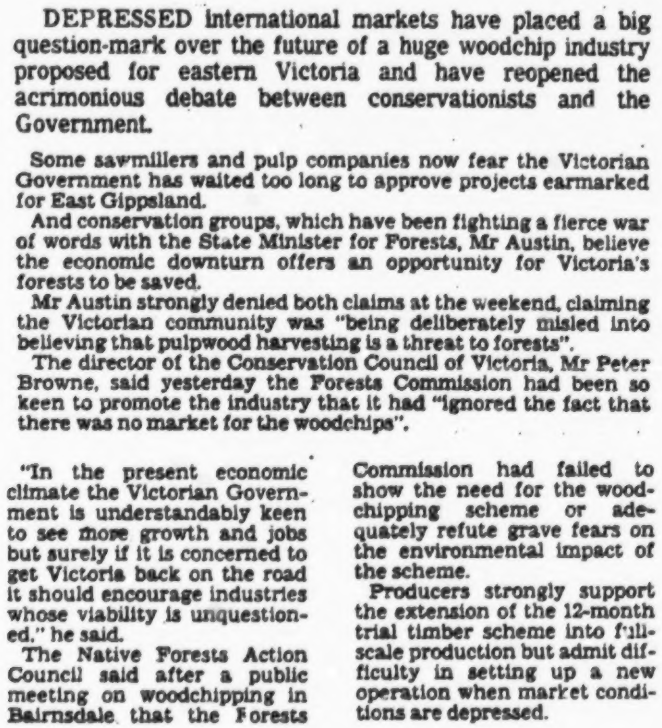
CSO: 5000/7528

FORESTS MAY BE SAVED BY DOWNTURN IN WOODCHIP INDUSTRY

Canberra THE AUSTRALIAN in English 8 Mar 82 p 3

[Article by Jill Baker]

[Excerpt]



DEPRESSED international markets have placed a big question-mark over the future of a huge woodchip industry proposed for eastern Victoria and have reopened the acrimonious debate between conservationists and the Government.

Some sawmillers and pulp companies now fear the Victorian Government has waited too long to approve projects earmarked for East Gippsland.

And conservation groups, which have been fighting a fierce war of words with the State Minister for Forests, Mr Austin, believe the economic downturn offers an opportunity for Victoria's forests to be saved.

Mr Austin strongly denied both claims at the weekend, claiming the Victorian community was "being deliberately misled into believing that pulpwood harvesting is a threat to forests".

The director of the Conservation Council of Victoria, Mr Peter Browne, said yesterday the Forests Commission had been so keen to promote the industry that it had "ignored the fact that there was no market for the woodchips".

"In the present economic climate the Victorian Government is understandably keen to see more growth and jobs but surely if it is concerned to get Victoria back on the road it should encourage industries whose viability is unquestioned," he said.

The Native Forests Action Council said after a public meeting on woodchipping in Bairnsdale that the Forests Commission had failed to show the need for the woodchipping scheme or adequately refute grave fears on the environmental impact of the scheme.

Producers strongly support the extension of the 12-month trial timber scheme into full-scale production but admit difficulty in setting up a new operation when market conditions are depressed.

CSO: 5000/7528

BRIEFS

RAINFOREST PRESERVATION--The National Trust has classified the Washpool forest west of Grafton and the Hastings Valley forests west of Wauchope. The trust classification, which means it thinks the areas should be preserved, puts more pressure on the State Government to prevent logging in the forests. A State Cabinet sub-committee under the chairmanship of the Premier, Mr Wran, is considering the future of Washpool, Hastings Valley, Terania Creek and other rainforests of the State. Sawmillers are demanding the right to log in the forests while conservationists are calling for them to be preserved. The National Trust says of Washpool: The area contains the largest remaining undisturbed rainforest in NSW and the largest intact coachwood rainforest in Australia. Of the Hastings Valley, it says: "The area contains large tracts of rainforest and includes the largest unlogged Antarctic Beech forests in NSW. [Sydney THE SYDNEY MORNING HERALD in English 4 Mar 82 p 11]

CSO: 5000/7528

STRICTER LAWS, SANCTIONS ADVOCATED TO PROTECT ENVIRONMENT

West German Commentary

Bonn IWE-TAGESDIENST in German No 42, 17 Mar 82 p 2

[Report from Berlin: "GDR Economy Is to Be Compelled to Protect the Environment." A translation of the Potsdam-Babelsberg STAAT UND RECHT article cited below follows this commentary]

[Text] The East Berlin journal STAAT UND RECHT [No 3, 1982] has asked that the GDR's economic laws more strongly take account of environmental protection. One task of economic laws was to contribute to the development of production relations in conformity with ecological principles. Current regulations only offered "initial handles" for it and were "effective only in part." As a priority task the journal mentioned an influence exercised by economic laws on shaping an environmentally acceptable production process. For developing optimum solutions, one should have to introduce, in particular, technologies that save raw materials and keep down or come without waste products and emissions. This East Berlin technical journal pointed out that a "steadily growing outlay of finances" was going to be necessary for environmental protection in the future. That circumstance was extremely important for economic law considerations because the enterprises were not sufficiently interested in environmental protection on account of the expenses involved. As ecological requirements of today normally became the economic prerequisites for tomorrow, they called for a prescient consideration and planned realization. That could only be done through overall social planning and an economic management which should have to be much refined by means of economic law.

Greater Financial Outlays Required

Potsdam-Babelsberg STAAT UND RECHT in German Vol 37 No 3, Mar 82 (signed to press 21 Jan 82) pp 240-249

[Article by Dr Sigrid Voss, Bruno Leuschner College for Economics, East Berlin: "More Intensive Use of Natural Resources and the Formulation of Appropriate Economic Laws"]

[Text] As any other form of social development, law also is always determined objectively and by a historic aspect. Through requirements evolving for new rules of law, basic theoretical questions are always raised regarding their being integrated with already extant traditional branches of law or new ones taking shape. Right now, that becomes most evident for the legal handles to be applied to the relations between man and the environment because this involves problems that are much intertwined and universal, as they affect the public activity of man on the whole. As an ecological view always suggests complex processes, the norms of public conduct to be governed by law likewise are highly complex. This means that a great number of legal norms--frequently of diverse branches of law--must absorb and substantively tie together partial aspects or programs of an all-inclusive ecological mode of behavior. That also is of importance for the further development of already established branches of law, including economic law.

Whereas up to now economic law considerations only picked up individual matters and things were dealt with point by point,[1] what from now on matters more is to explore more deeply and systematically under which prerequisites, to what extent and in what way the shaping of man's relation with his environment also becomes approachable through legal regulations. This is not meant as an alternative for the newly emerging complex legal field or branch of land management. The need for economic law considerations rather follows from the developmental conditions of the regulatory subject of socialist economic law itself and is indispensable for its becoming more effective in social practice. We must therefore clarify not only the possibilities but also the limits of economic law enactments in resorting to the natural resources, which includes the protection they need.

I

As the 26th CPSU Congress and the 10th SED Congress unanimously affirmed, a better use of natural resources is both an objective requirement and an integrated process in our intensively expanded socialist economic reproduction. Economic requirements have to be derived from the perspective on overall social developmental goals, priority being given to socialist society's social requirements. Inherent in the socialist social order is that man increasingly proceeds toward deliberately steering not only his own development, but also the forces of nature outside of him, since the realm of his actual freedom can only begin when he himself directs, regulates and controls the development of society as of the forces of nature.[2] Society's productive metabolism must be regarded as the main handle for economic law regulations, even if also through it the preconditions are created for man's individual-consumptive metabolism, in that the qualitative condition of our natural environment that is needed for it stays intact.[3] Consequently, all legal regulations are aimed not only at the protection of the natural environment but simultaneously--often even primarily--at the protection of human life and health. Law in its entirety must help organize the societal or social modes of conduct conducive to ecological requirements. These requirements are often referred to by the concept of the so-called ecologization of law.[4]

Under those prerequisites it also is a task of economic law to contribute to the shaping of production relations in conformity with ecological principles. This means that economic law systematically has to shape the productive appropriation of nature in such a way that simultaneously with the reproduction of natural resources one will combine their ever more rational utilization by confining or avoiding detriments to the environment, such as solid, liquid, gaseous, energy, acoustic and thermal stress.

This, from the vantage point of economic law, affects the relations of planning, cooperation and the immediate economic activity of the economic units alike. Both the natural resources in their entirety (mineral and soil resources, the soil itself, water, air; biological resources, i.e. the fauna and flora) and the natural environment as a whole enter the regulatory field of economic law. This, however, raises diverse legal regulation requirements and questions of demarcation from other legal branches and fields. They call for diversified determinations according to the type and condition of the natural resources and the repercussions caused thereby to the natural resources reserves and the reproductivity and the reproduction behavior of the various natural resources within their given territorial frame of reference.

All types of resources again are themselves multilayered in structure. Among the mineral resources, e.g., there are many types, apart from exceptions, that cannot be reproduced. The need the various natural resources have for legal protection also greatly depends on their specific economic importance, i.e., the present and future chances for using them, the volume of natural resources deposits and the possibilities for their natural reproduction, and their position within the system of all other natural resources. It must be kept in mind that natural resources, when they are lost from the natural context even though they continue to be naturally relevant, enter the economic raw materials cycle as primary or secondary raw materials. As land management legislation is mainly concerned with the protection of the natural resources in their natural frame of reference, a significant field opens up for economic law regulations. In this, partial processes as such in the appropriation of nature (e.g. mining or water management) or in recycling or in the reproduction process (e.g. reused material or forestry) may take on a production process of their own. To the extent that this amounts to industrially organized production, it in any case is largely subject to economic laws, even if at times in a modified manner. As the appropriation and reproduction of nature mainly takes place, however, within the scope of production activity, economic laws in their totality are affected by environmental problems, even if not all environmental problems arising in the field of economic activity solely fall under economic law. That circumstance is caused also by the mechanism for economic laws, for which the existence and development of social and collective economic interests have to be regarded as essential. For the sake of greater differentiation among the legal branches, these problems have been discussed repeatedly in the past.[5] There still are differences of opinion. Even so, in principle one must proceed from that economic law embraces the complicated motile mechanism of societal and collective economic interests. By realizing their collective economic interests, the economic units also realize their societal interests. Yet the goals of society and of the economic units cannot always be identical because they differ from each other due to the character of the reproduction process itself, so that their goals differ in their order of rank.[6] Societal interests always must aim at providing an optimum distribution and utilization of the available natural and societal resources. As they in any given period may become scare resources, interests contrary to those of specific economic units certainly may result--which Radajew has called interest cleavage. It becomes increasingly necessary to safeguard the natural conditions when labor productivity rises, which requires constantly increasing financial outlays. That fact is of extraordinary importance for economic law considerations. Marx himself has pointed out that "a change in natural circumstances" must consciously be taken account of.[7] That also applies particularly to socialist production conditions. As the consideration for the natural conditions of social labor often involves future basic lines of development, economic advance leads are necessary for developing the productive forces and for the social division of labor on the overall societal scope. Ecological requirements of today as a rule become economic prerequisites of tomorrow. They therefore call for prescient consideration and planned realization. As the collective economic interests of the economic units are not directed at them to the same extent, the conditions for a planned structuring of the commodity-money relations consequently become, not last, more complicated and call for a great deal of overall social central planning and for economic management that must be much refined by means of economic law.

The question keeps cropping up in this connection as to how far the solving of environmental problems is now already approachable from the vantage point of economic interests. All these problems are multilayered and complicated and are based on ideas of an all-inclusive economizing of the man-environment relations after an assessment of the natural resources. Present-day solutions therefore represent none but the first beginnings for a future economic mechanism, such as fees for natural resources (dues for the use of soil and water) and certain forms of economic balancing or material sanctions (such as payments for dust, exhaust or sewage), which shows no intrinsic cohesiveness as yet and becomes effective only in part. In spite of that, environmental processes should already now be brought into the regulatory domain of economic law. This possibility follows mainly from the planned structuring of the socialist commodity-money equation and includes also the necessity for economic redistribution processes on the overall societal scale. Furthermore, it is no longer impossible today to link the intrinsic movement of a chief economic process so much with fulfilling environmentally relevant objectives that implementing overall societal reproduction will also include the implementation of environmentally relevant requirements (e.g. quality-related or a materials economy development of products or production processes). Under that aspect, while organizing economic law relations, in principle thought should be given to the possibilities for setting down both rights and duties, yet one should in principle avoid any consideration that relates exclusively to setting down only duties. Shaping an economic mechanism invariably raises the question to what extent extant economic interests present handles for subjective rights and duties and cause quite definite structures. For obtaining effective legal arrangements, they cannot be set down at will because their effectiveness always depends on objective presuppositions. Under certain circumstances, therefore, even in environmentally relevant relations the granting of rights may become the more efficient method for enacting laws. Alekse'ev, e.g., holds that law must erect no barrier between man and nature, wherefore the setting down of duties, especially in the form of proscriptions, limitations and accountabilities, always ought to come second. And that is the reason why economic units, e.g., may in a most differentiated manner, be granted the right to use nature or specific natural resources. It may be authorized in general, granted in individual cases, and even be restricted in its exercise.[8] Already we find in the business of law special laws relating to the use of natural resources which, from the vantage point of economic law, can possibly be extended and generalized, such as the right to survey, extract and store mineral resources or the right to the use of water.

Increasing practical importance ought to attach also to the right to deposit potential secondary raw materials and another right, closely linked with site utilization, to use the natural resources of the territorial resources associations. The exercise of rights can then be linked with the fulfillment of duties in such a way that the ways and means of exercising it also get more specifically defined.

II

The crucial starting point for economic laws is the planning and balancing process. The planned handling of a more intensive use of the natural resources cannot be accomplished merely by planning regulations on details, such as environmental protection regulations, but calls for planning law as a whole. This, therefore, has both a general and a special aspect, as its effectiveness is determined by the level of planning regulations as well as by integrating particular environmental requirements with the general planning process regulations. Both aspects alike need still to be developed today. The further extension of planning regulations thus must be aimed primarily at refining planning decisions in consideration of pertinent requirements. This should find its expression in a greater complexity, correlation and balancing of planning and balancing decisions that would also include the requirements for a more intensive utilization of the environment. Irrespective of branch and territorial boundaries in effect, we have to proceed toward an ever more complex planning and balancing of the natural resources. From the economic vantage point, the optimum structuring of the man-nature equation finds its concrete expression in balancing needs with resources. The balance responsibility of the balancing organs therefore must be aimed ever more extensively at structurally organizing and utilizing the natural resources available. This can, with respect to the future, not only aim at producing conformity between production output and needs but should create ever more comprehensively a congruence between natural resources and production yields and needs. The whole process of establishing and evaluating needs must be handled by law in such a way that economically acceptable needs may arise only on the basis of the natural resources we actually have (including possible imports).

Under that aspect, discriminating legal instruments have to exercise a need-control influence, such as by balance shares for primary and secondary raw materials, licenses and restrictions for the use of natural resources and materials, standards, normatives and norms. The balancing of primary and secondary raw material deposits and the authorization for a harmless removal of waste products must more and more be handled as a unified and streamlined decision process, even if that in part has to be brought about through a division of labor. Essential steps in that direction have already been taken by the balancing order decree of 15 November 1979 and the new decree on the use of secondary raw materials, of 11 December 1980.[9] And still we shall need in the future more definite structures for rights and duties that should at equal measure relate to the division-of-labor cooperation of the balancing organs, the fields that initiate, receive and recycle secondary raw materials and the local state organs and other organs (such as special collection organs like the VEB combine for secondary raw material utilization or the metal reprocessing VEB combine). Especially the laws that have to do with the reuse of secondary raw materials need to be further developed and extended in several respects. That must not be delayed to the reutilization process but must start in the preceding production processes or levels because they, due to their structuring the use of primary raw materials, also largely control the availability and structure of the secondary raw materials. In the balancing process itself, it becomes ever more important to come up with qualitative criteria along with the quantitative ones. When primary raw materials are requested, information should be added to it about the reuse of secondary raw materials coming off the use of the primary ones.

The responsibility given the prime producers for the recycling of their raw material as set down in Article 7 of the decree on the extensive use of secondary raw material requires further stipulations for concrete right and duty structures, which mainly have to be applied to the planned organization of scientific-technical progress, the investment activity, the statistical and use-value analysis of available secondary raw materials, and the cooperation among enterprises.

Here, in terms of legislation, the potential reprocessing areas should be more clearly distinguished from the prime user or output areas, because they need not be identical. All laws should more resolutely seek new fields for the use of secondary raw materials. The situation at present is that neither local state organs (e.g. the bezirk councils, the environmental protection departments and water management) nor the balancing organs or the prime users that make secondary raw materials available have a legally secured opportunity to issue reuse allocations and balancing leads or conclude contracts. That is detrimental especially when it involves secondary raw materials that were not yet allocated balancewise or are new or become available in small volumes only. Granting licenses for the harmless removal of waste products should in substance be more tied up with the balancing process and be differentiated from the temporary storage of secondary raw materials to be reused later. This opens an entirely new field for further regulations, not only in economic law but also in other branches of law, such as land management and land and administrative law. But this exactly then also greatly controls the need for the correlation of various branches of law.

Societal complexities must not necessarily lead to the formation of a complex branch of law--as is often assumed--but can also lead to complex efforts by several branches of law, through entwining, via facts of law, the legal competencies of various legal branches. Forms of economic law, e.g. planning or balancing decisions, can also become facts of law in issuing administrative measures; they, in turn, can become facts of law in establishing or developing economic law relations (e.g. as licenses or allocations). Such linkages of the decision-making process must definitely be given attention by legislation. That is to say, the effect of forms of administrative law as facts of law must, e.g., be anticipated as a matter of course within the scope of eocnomic laws and be legally more closely defined. That way alone can we improve the effectiveness of socialist law as such.

III

While not yet carried through in all theoretical detail, economic laws far transcend their legal authority over organizational, planning and cooperation relations and also embrace the immediate process of economic activity. Thus far, one mainly conceived of the influence laws may bring to bear on keeping commodities up to standards but not on dealing with the production process per se. Under the conditions of the scientific-technical revolution, the link between economics and technology must be given still more attention and be opened to the influence of law in terms of a more comprehensive connection between the ecology, the economy and technology. Technology stands out in this regard because, "its destination being directed at the needs" of man, it is "aimed in its material starting point at the natural environment and its resources," wherefore it constitutes in this sense a "man-nature equation derived from the interaction between the appropriation and the control of nature."[10] According to Marx, technology discloses man's active attitude toward nature.[11] That is why economic laws also must affect an environmentally appropriate handling of the production process. For developing optimal solutions, ecological considerations whould also be taken into account and one should introduce in particular technologies that save natural resources and produce no or only few waste products and emissions.

That is normally accomplished, not by bringing laws directly to bear on applied technologies, but by a complex of laws already effective in planning. Here the qualitative development of means of productions or production systems is already of essential and transcending character. As quality applies however only to production technique aspects and is determined in view of preceding production processes, applied technology aspects within the scope of the technological process require special attention. Thus it is also up to the economic laws to make a considerable contribution to enforcing economic requirements in the use of natural resources. For reducing the total of natural resources used and diminishing the stress on the environment, the following requirements arise:
--enhanced production refinement,
--comprehensive use of raw materials,
--setting up integrated material cycles,
--material substitutions, and
--recycling secondary raw materials.

The influence laws may bring to bear mainly appear in the forms of standards, normatives and norms, though they often take effect within an aggregate of more extended legal forms, such as governmental utilization provisions, precepts, proscriptions, authorizations and licenses. The multiformity of current practice is mainly due to the lack of a generalization capacity, for ecological, economic and technical reasons, even though especially the ecological requirements suggest that it is increasingly necessary to objectify the matters on which decisions have to be made. This fact has already found its legal expression in the seventh implementation regulation for the standardization decree,[12] which deals with the standardization of the demands to ensure socialist land management and environmental protection and the gradual construction of an integrated complex of standards. The limits to which one can standardize are, however, set by the already extant possibilities for generalizing such requirements and are in flux, compared with usage norms. Usage norms, compared with standards, are constantly developing legal forms of importance in their own right, though they can also be put into effect via standards or plan decisions. For the sake of economic laws, they should thus be given more attention and more of a legal authority.

Thus the influence brought to bear by economic laws on keeping production processes in line with environmental considerations can be brought about by various kinds of usage norms pertaining to the extraction, utilization, conversion, stress and recycling of natural resources and to their being lost. In analogy with forming an integrated system of standards, one should gradually also start designing a complex and uniform system for usage norms and norms. As this amounts to a system that must closely correspond to plan parameters and standards, the integration aspects also should be given more attention. Ultimately, the design of plan parameters, standards, usage norms and norms can come only out of uniform ecological requirements, even if their place values differ within the overall economic legal system.

Developing one of these areas then also raises qualitative demands for the further extension of others. Moreover, settling matters in terms of usage norms crosses over into other fields; it contributes not only to keeping the production process in line with environmental considerations.

FOOTNOTES

1. Cf., inter alia, R. Scheibe and S. Voss, "Quality Agreements in the Economic Contract--A Means for Enforcing Environmental Protection," WIRTSCHAFTSRECHT, 1978, pp 94 ff; "Drawing up Economic Contracts on Scientific-technical Achievements and Enforcing Environmental Protection," Ibid., 1979, p 99; H. Bartz, R. Scheibe and S. Voss, "Enforcing the Demands of Socialist Land Management in Preparing and Placing Investments," Ibid., 1980, No 4, Supplement.

2. Cf. G. S. Gudoshnik, "Wissenschaftlich-technischer Fortschritt. Wesen, grundlegende Tendenzen" (Scientific-technical Progress--Its Essence and Basic Trends), Berlin, 1974, p 276.

3. Cf. "Umweltgestaltung und Oekonomie der Naturressourcen" (Environmental Planning and the Natural Resources Economy), Berlin, 1979, pp 36 ff.

4. Cf., inter alia, V. V. Petrov, "Legal Problems in Ecology" (in Russian), Moscow, 1980, p 126.

5. Cf. especially W. Panzer, "Theoretical Aspects of Economic Legal Relations," STAAT UND RECHT, 1979, p 649; "On Legal Rules for Economic Relations in the Developed Socialist Society," Ibid., 1980, pp 911 ff.

6. Cf. W. W. Radajew, "Oekonomische Interessen im Sozialismus" (Economic Interests in Socialism). Berlin, 1974, p 273.

7. Cf. K. Marx and F. Engels, "Werke" (Works), Vol 23, Berlin, 1962, p 536.

8. Cf. S. S. Alekse'ev, "Law and Our Life" (in Russian), Moscow, 1978.

9. Cf. especially Article 2 and 5 in "VO ueber die Material-, Ausruestungs- und Konsumergueterbilanzierung--Bilanzierungsverordnung--15 November 1979," GBL, Part I, 1980, p 1; "VO zur umfassenden Nutzung von Sekundaerrohstoffen, 11 December 1980," Ibid., 1981, p 23.

10. Cf. "Umweltgestaltung . . . .," op. cit., p 59.

11. Cf. K. Marx and F. Engels, "Werke," Vol 23, p 393.

12. Cf. "7. DB zur Standardisierungsverordnung--Standardisierung von Forderungen zur Gewaehrleistung der sozialistischen Landeskultur und des Umweltschutzes, 27 November 1975," GBL, Part I, p 763.

Use of Fines, Imprisonment

East Berlin NEUE JUSTIZ in German Vol 35 No 10, Oct 81 pp 442-446

[Article by Dr Heinz Duft, sector chief, Ministry of Justice; and Prof Dr Hans Weber, head, faculty for criminal law and law of criminal procedure, GDR Academy of Political Science and Jurisprudence: "Prevention and Control of Violations of Environmental Laws"]

[Text] A successful continuation of our policy, aimed at the well-being of the people, as persuasively reiterated at the 10th SED Congress, also includes the protection, preservation and sensible use of nature and its resources. Clear requirements are issued about that in the 10th SED Congress directive on the five-year plan for the development of the GDR economy, 1981-1985: Measures have to be continued according to plan for keeping our water clean, using and protecting our soil, keeping the air clean, reducing noise and eliminating and using refuse and industrial waste products, and environmental conditions have to be improved, particularly in working class centers and conurbations.

Decent human conditions and a sensible use and protection of the environment from dangers and detriments are part of our shaping our working and living conditions. It is important to use all the advantages of socialist society in protecting the environment from dangers and detriments in accordance with the social, especially the economic, chances we have.

An effective protection of our natural environment is up to all of socialist society, particularly to the socialist state. That is something the chiefs of work collectives in the combines and enterprises have come to understand increasingly better in recent years, for which reason they have turned a strict obedience to the regulations issued about it into an integral part of their activities seeking exemplary order, cleanliness and discipline.[2] The local people's representations and their councils likewise have, in their resolutions and in the municipal and communal regulations for citizens and enterprises, set down rules, e.g., on refuse disposal, tree maintenance, waterways and recreational sites. All this indicates the demands developing in this area under our socialist conditions; and it also makes clear what our real chances are for ensuring their being implemented. On this basis, the citizens can take part in effective supervision by the local state organs and their institutions and thus consolidate our legality.[3] We must not lose sight of the fact, however, that along with these social activities seeking to abide by and enforce legal obligations for the protection of the environment, rather large scientific-technical achievements and economic outlays are necessary, to make the protective measures truly effective. That calls in part for extensive investments, among other things for technologies and techniques which meet the requirements of environmental protection, for inspecting and maintaining pleasure-grounds, and for flood relief and water protection.

It greatly depends on a sensible combination between these creative human activities and economic efforts for us to be able to accomplish in the future high economic performance improvements while further developing the protection of the environment and of the life and health of men in our socialist society.

The Legal Protection of the Environment in the International Debate

International cooperation is needed ever more urgently for the protection of the environment. This thus is an important field in international relations, an integral part of socialist economic integration by the states in the socialist community as well as in the peaceful coexistence framework among states with differing social orders.

On the various levels and fields of law, an elaboration of international law principles is being sought, meant to be administered within the legal systems of the various states. Also the 12th International Criminal Law Congress of the International Criminal Law Association (AIDP), in September 1979 in Hamburg, among other things, dealt with issues of criminal law protection for the environment; one of the things demanded there was a better coordination and cooperation on the international level. What the discussions at that congress made clear, however, was that the two social systems have completely different environmental protection problems. In part the debate became an indictment of the capitalist monopolies which, out of profit greed, despoil the natural resources and thus harm considerably the life of working men (e.g. by the deforestation of whole forests in Latin America).

In conformity with the differences between the social systems, the demands or expectations of a legal protection of the environment also differ very much. Even so, the international congress did adopt a joint resolution in which the following basic principles of environmental protection were formulated:
--Major attention goes to measures not subject to criminal law but mainly to administrative and civil law.
--Above and beyond the protection of life and health, at least the water, the air and the ground have to be recognized as subject to law and so be protected by criminal law.
--Criminal law must not confine itself to traditional facts of the case, but special provisions must be introduced or further developed for environmental protection.
--Appropriate measures must facilitate the prevention, disclosure and prosecution of environmental crimes. An important chance for that lies in encouraging a public atmosphere of intolerance to any form of violations of environmental laws, so that they may be prevented or controlled.
--International principles, norms and minimum tolerance limits are to be worked out for the future.

The GDR's legal system fully conforms to those requirements. In particular, it is marked by the comprehensive legal protection of the environment ensured by the cooperation among various fields of law. Along with an effectively organized and ever improving prevention of environmental damage, the legal responsibility for environmental hazards brought about is set down with great discrimination. The various types of legal responsibility are correlated with one another.

Differentiated Legal Measures for the Violation of Environmental Laws

Proceeding from a principle in our Constitution (Article 15), through the law on a planned handling of socialist land management in the GDR--the land management law--of 14 May 1970 (GBL, Part I, No 12, p 67), a public law that is uniform and all-inclusive, and a matter of principle, has been enacted. Articles 7 through 9 set down the tasks of the enterprises and their responsibility for reducing or eliminating production-conditioned environmental hazards. The enterprises and their managerial organs have to see to it that the land and its resources are sensibly and rationally used. It is their responsibility that through their activities hazards to the natural environment are excluded as much as possible, necessary land management measures are taken, and all this is given attention even at the time that long-range plans are drawn up.

Special importance, by that token, also attaches to the local people's representations and their organs (Articles 2, section 3; 4, section 2 through 4; 62, section 3 of GoeV). In their status reports, the enterprises are under the obligation to account to those organs for their land management measures. They systematically have to apply the most advanced science and technology data and develop and use procedures and installations that as much as possible exclude harmful effects and burdens on the people and their environment. Because of the constantly deepening cooperation among the socialist states within the framework of socialist economic integration, the state and economic organs and enterprises are under the obligation to make full use of the experiences and scientific data of the Soviet Union and the other socialist countries and develop close cooperation in socialist land management. As set down in the land management law, in a number of implementation decrees and other law regulations, further environmental protection obligations have been made more specific, for instance, for protecting the fauna and flora and the landscape, keeping towns and communities clean, noise protection, and keeping air, water and the ground clean.[4]

If citizens or enterprises, out of indifference, negligence, recklessness or similar attitudes, violate the duties set down in the land management law or its implementation regulations or other legal provisions, differentiated governmental measures will enforce dutiful conduct. Depending on what such duty violations amount to, the following reprisals to be enforced through governmental coercion are possible:
--The authorization of the local councils and other governmental jurisdictions to levy fines on enterprises and citizens and demand compensation for excess expenditures and damage caused by duty violations (Article 38, section 1, LKG);
--The bezirk councils' levying dust and exhaust dues when emission limits are exceeded (Article 18, section 1 of the 5th DVO for the LKG);[5]
--damage payments from enterprises (re Article 1, section 2 of the 5th DVO for the LKG) which pollute the air (through emission), and from other enterprises under the conditions as of Article 19, section 1 of the 5th DVO for the LKG;
--The obligation by those who cause emissions to pay damage in settlement of economic injuries or a liability for damages for agricultural and forestry enterprises (Articles 13, section 2 and 19, section 2 of the 5th DVO for the LKG, together with Articles 17 and 18 of the ground utilization decree);
--damage payments to compensate for excess expenditures vis-a-vis towns and communities when allowable limits are exceeded and emissions cause such excess expenditures (Articles 19, section 1, and 12, sections 4 and 5 of the 5th DVO for the LKG, and Article 5, section 1, LKG);
--obligations to avoid harmful effects (emissions) or damage payments or the obligation for damage payments to citizens whose personal property was affected by air pollution (Articles 329, 323 ff., ZGB)); and
--disciplinary fines and measures against managers and associates of enterprises causing emissions, if they are guilty of having violated their legal obligations (e.g. Articles 21 and 22 of the 5th DVO for the LKG).

Furthermore, there are still other law regulations by which legal liabilities are framed as public order violations when they amount to discipline violations and interfere with state management or with the development of socialist communal life yet do not seriously infringe the interests of socialist society and each individual citizen, for which reason they are no criminal acts (as, e.g., in accordance with Article 23 of the first DVO for the LKG; Article 16 of the 3rd DVO for the LKG; Articles 14 and 15 of the 4th DVO for the LKG; Article 21 of the 5th DVO for the LKG; Article 11 of the atomic energy law; Article 35 a in the radiation protection decree; Article 45 of the water law or Article 14 of the poison law).

Through the second criminal law amendment of 7 April 1977 (GBL, Part I, No 10, p 100), with inserting Articles 191 a and 191 b in the Penal Code, the legal protection of the environment also has been strengthened.

The complex laws for environmental protection demonstrate that the GDR's legal system meets the requirements for comprehensive environmental protection. It ensures the use of the environment for the benefit of men and prevents environmental hazards. Our law concretely sets down the basic lines for environmental protection and the rights and duties in this field of citizens, managers, and state organs. Ensured also is the supervision on meeting these obligations (by state and social control organs and a discriminated levying of sanctions in case of law violations). These complex laws go a long way toward preventing criminal disturbances of the environment.

Criminal Law Provisions for the Environment as an Integral Part of Uniform Socialist Criminal Law

Natural resources in the GDR are largely public property, the management and planning of all public life pursue overall state and social interests, and the private profit economy is abolished. This provides important social preconditions for depriving criminal violations of the duties for the protection of the environment of any ground to stand on. Conflicts of interests, which may arise, e.g., between having the enterprises fulfil their economic objectives and the protection of the environment, are barred, or at least confined, as much as our economic possibilities allow. Thus the socioeconomic starting positions for the decreeing and the effect of penal provisions in the socialist countries are wholly different from what they are in capitalist countries, where the "search for profit and not the love for man is the elixir in the imperialist modes of thinking and conduct."[6]

To be able to effectively counter criminal acts against the environment, in the second criminal law amendment legal protection from environmental hazards was uniformly and comprehensively taken care of in accordance with the now more mature social relations. Up to then, the legal protection of the environment applied only to particulars. Criminal law regulations were contained in laws outside the Penal Code, particularly in the water law of 17 April 1963. Certain violations of environmental protection could also be prosecuted as crimes against health and labor safety protection, when persons responsible for labor safety, by violating their duties to labor safety and health protection, also incurred environmental dangers (as, e.g., in case of an explosion in a chemical enterprise which released noxious substances polluting the air, the water or the ground). Acts damaging the environment also could be prosecuted as injuries to the economy in line with Articles 167 and 168 of the Penal Code. Causing the danger of disaster (Article 191 of the Penal Code) in a way also constitutes an imperiling of the environment.

This in a way limited protection no longer satisfied the demands for environmental protection raised primarily by scientific-technical progress. Entitled "causing environmental dangers," Article 191 a and b was therefore put into the Penal Code, providing for legal liability for any deliberate violations of environmental protection obligations (Article 191 a in the Penal Code) and for negligent violations of duties (Article 191 b in the Penal Code).[7]

These laws establish uniform preconditions for legal liability in causing environmental dangers. To it, all principles of unified socialist criminal law also apply. There is then no special criminal liability for this with certain special or exception rules, as had sometimes been demanded in the international debate.

Only persons, of course, can be criminally prosecuted, not enterprises, institutions or collectives.

In contrast to other kinds of legal liability or other legal sequences, environmental protection under law takes the individual liability of a person for granted. Mainly in capitalist countries there are efforts afoot to hold enterprises also accountable for environmental damage. Such proposals hide, on the one hand, an antipathy to capitalist monopolies and the large-scale environmental damage they cause and, on the other hand, the mistrust in the will and ability of capitalist criminal justice effectively and rigorously to apply sanctions against the corporation bosses and their stooges. Some who are for it also intend to provide particular entrepreneurs or their agents with chances to evade their liability or take cover behind the liability of their corporations.

Socialist society knows no such reasons. Laws here provide adequate opportunities for also holding enterprises accountable for the environmental damage they cause (by having them pay damage or indemnities).

Among us, a liability exists when the offencer has acted intentionally or negligently. An effective legal protection of the environment does not require abandoning basic criminal law principles (such as guilt or causality) or transforming criminal liability into an object of contingency. Furthermore, the sanctions threatening for crimes against environmental protection are all provided for in the Penal Code, and so there are no particular penalties for it.

Crimes Against Environmental Protection--Concrete Jeopardy Crimes

Causing environmental danger is among the crimes against general security. Such jeopardy crimes cause conditions of general danger the curtailing and course of which is inconceivable or cannot be kept under control by the offenders. Criminal liability presupposes a common danger, i.e. an immediate imperilment of human life or health or of important property values. A common danger exists also when vital public supplies encounter considerable hazards (Article 192, Penal Code). Legal or disciplinary offenses not causing dangers of such range establish no legal liability for causing environmental danger. They may, if the facts of the case are such, be prosecuted as irregularities or become a labor law or civil code liability.

Environmental protection laws also handle the negligent responsibility for serious health damage or for causing people to die. These are special cases of negligent manslaughter or bodily injury. Legal regulations for causing environmental danger precede the general provisions on negligent manslaughter or bodily injury (Articles 114 and 118, Penal Code). This arrangement underscores that the accountability for environmental protection includes that for human life and health.

The Scope and Shape of Environmental Protection Under Law

Protected under criminal law are the ground, the water and the air, from pollution by noxious substances or pathogenic agents. This means that noise, e.g., does not fall under these provisions but may in a given case entail civil law liability in accordance with Articles 328 and 329 in the Civil Code. That would then concretely show up, e.g., in civil suits pressing for the elimination of noise by air conditioning devices, grinding devices or defective mufflers on tractors. Similar suits could also be brought for dust and smell emissions and air pollution by exhaust gas causing serious harm to plants and buildings.

A case of pollution exists when noxious substances or pathogenic agents are allowed to affect the ground, the water or the air exceeding the limits of provisions on purity standards. Dirty drinking or utility water also establishes a legal liability when the extent of it causes a common danger.

Environmental protection laws are highly pertinent in this field. What one wants to accomplish mainly is that managers of agricultural enterprises and facilities, agrotechnicians and complex chiefs assume their responsibility and prevent water pollution in the first place, caused by
--silos set up inexpertly or without the necessary license from the state building inspectorate, or in violation of that organ's site specifications;
--inexpert elimination of feces (draining manure in lumps, compactly, on farm acreage and letting it run into drinking water reservoirs); or
--improper practices for dealing, storing, shipping and applying means of crop protection (special herbicides).

But laws should also prevent serious duty violations by citizens, enterprise managers, managers and associates of state or cooperative trade facilities and vacation homes, who through an inadequate installation, maintenance and supervision of seepage tanks, gross violations in the service and maintenance of oil heaters, failing to report breakdown at once, gross mistakes in the repair of water pipe damage, or in installing by-pass systems, would cause serious dangers or material damage.

About Guilt

Criminal liability is predicated on the violation of a legal or occupational responsibility. This must amount to concretely defined and acountable responsibilities relating either directly to environmental protection or to labor safety, security and fire prevention provisions which, when violated, lead to environmental danger. Negligence may, e.g., make chemicals catch fire and so much pollute the ground, the water or the air that a common danger arises. Also by the infringement of provisions on hygiene, water may get polluted. The duties violated thereby may relate directly to the laws (such as the land management law and its implementation regulations) or to an occupational activity (in managing risky production processes, e.g., or carrying out experiments and such).

Liability is not confined to a specific groupof persons (such as the manager or managerial associates, for instance) but exists in every occupational responsibility to environmental protection. Yet this responsibility has to be defined concretely enough.

Liability in any given case is predicated on guilty conduct. And here one must always examine whether, in accordance with the principles for such guilty conduct, opportunities for proper social conduct existed. No one can be held liable who caused an environmental danger by a faulty handling of certain chemical substances with which he was not familiar and the risks of which were not told him, or who has not yet obtained the requisite skill or experience in such an activity. To be sure, liability may arise here for those who familiarized him with his task but acted irresponsibly doing so.

Liability also arises only if the person responsible could have prevented the danger under the given conditions in the first place. In the liability in causing environmental danger, so-called combined forms of guilt may apply, which are a mix of intention and negligence. Duty violations on purpose may come combined with negligently causing a common danger or a serious health damage or the death of a person or several persons. There may also be crimes committed on purpose causing a common danger exclusively, yet also negligent violations of duties that negligently produce a common danger. In conformity with these legal principles, legal liability is rendered specific in the law in the case of certain violations of legal obligations.

On Raising Legal Liability

On behalf of an effective legal protection of people's life and health, a higher legal liability attaches to serious cases. This applies to
--causing a common danger on purpose;
--negligently causing serious health damage or the death of one or several persons;
--inconsiderate violations of the provisions for the protection of the ground, the water or the air; and
--an especially irresponsible violation of cautionary obligations to social fellowship.

In serious cases, a prison sentence threatens, which may run for 8 years in the most serious cases.

In criminally causing environmental danger, the general provisions are in effect for sanctions in accordance with the facts of the case and for determining the measure of penalties. Extra penalties may also be pronounced, such as proscribing certain activities (Article 53, Penal Code). An offender may be barred from the exercise of his occupation temporarily or permanently, if he commmitted his violation by grossly infringing his work obligations, e.g., if he was drunk while he committed his violation or neglected elemental work obligations such as the required checking of installations for their operational safety or gross negligence in reading metered values, or when the environmental dangers were caused by faulty project planning or faulty installation or aggregate construction. He may also lose permits, for handling poisons, for instance.

An extra penalty may be a monetary fine. It always depends on the grade of seriousness and the consequences of the act, the degree of the environmental imperilment, health demage and a possible fatality or several. Economic aspects are important, too, e.g. endangering public supplies in vital commodities. Consequences must always been regarded as part and parcel of the guilt.

Penal measures do not cancel legal sequences in consequence of other legal provisions. Dust or exhaust dues, the obligation to make good for economic injuries or paying damage to agricultural or forestry enterprises, indemnities or compensation for emissions, e.g., may continue in effect.

FOOTNOTES

1. G. Mittag, "Direktive des X. Parteitages der SED zum Fuenfjahrplan fuer die Entwicklung der Volkswirtschaft der DDR in den Jahren 1981 bis 1985," Berlin, 1981, p 61.

2. Cf. S. Heger, "Tenth SED Congress Continues Basic Line for the Well-being of the People," NEUE JUSTIZ, 1981, No 5, p 194.

3. Cf. W. Kirchhoff, "National Front and Socialist Legality," NEUE JUSTIZ, 1981, No 5, p 197; H. Krueger, "Survey Results on Enforcing Municipal Ordinances," Ibid., 1981, No 4, p 168; W. Herzig, "Measures on Further Strengthening Order and Security in Magdeburg," Ibid., 1981, No 3, p 119; H.-J. Semler, "On the Responsibility of the Local People's Representations in Ensuring Socialist Legality, Order and Security," Ibid., 1981, No 1, p 17.

4. Cf., e.g.,
   --1st DVO (Implementation Decree) for the LKG (Land Management Law) -- "Protection and Preservation of the Flora and Fauna and the Beauty of the Landscape"--Nature Protection Decree--14 May 1970 (GBL, Part II, No 46, p 331);
   --2nd DVO for the LKG -- "Projecting, Maintaining and Developing the Landscape for Recreation"--14 May 1980 (GBL, Part II, No 46, p 336);
   --3rd DVO for the LKG -- "Keeping Towns and Communities Clean and Using Residential Refuse"--14 May 1970 (GBL, Part II, No 46, p 339);
   --4th DVO for the LKG -- "Protection Against Noise"--14 May 1970 (GBL, Part II, No 46, p 343);
   --5th DVO for the LKG -- "Keeping the Air Clean"--17 January 1973 (GBL, Part I, No 18, p 157);
   --6th DVO for the LKG -- "Utilization and Harmless Elimination of Waste Products" --11 September 1975 (GBL, Part I, No 39, p 662);
   --Law on the Protection, Use and Maintenance of the Waterways and on Flood Protection (Water Management Law)--17 April 1963 (GBL, Part I, No 5, p 77) and the Decree on Handling Substances Harmful to Water (Decree on Water Pollutants) --15 December 1977 (GBL, Part I, 1978, No 3, p 50);
   --GDR Mining Law, 12 May 1969 (GBL, Part I, No 5, p 29);
   --Law on Handling Poisons--Poison Law, 7 April 1977 (GBL, Part I, No 10, p 103);
   --Law on Atomic Energy Use in the GDR--Atomic Energy Law--28 March 1962 (GBL, Part I, No 3,, p 47);
   --Decree on the Protection of Agricultural and Forest Lands and the Protection of Socialist Soil Use--Soil Use Decree--26 February 1981 (GBL, Part I, No 10, p 105);
   --Radiation Protection Decree, 26 November 1969 (GBL, Part II, No 99, p 627);
   --Decree on the Transportation of Dangerous Goods, 8 July 1980 (GBL, Part I, No 22, p 217).

5. These are funds the bezirk councils allocate to the towns and communities for accommodation and adaptation measures. Moreover, enterprise managers are duty bound to analyze the causes of emission limit infringements and to inform the local councils on the results of their analysis and the measures taken to respect the limits.

6. On 1 July 1980, the 18th criminal law amendment--Law on Controlling Environmental Crime--of 28 March 1980, came into effect in the FRG. Even though this law inserts a new section, "Crimes against the Environment," in the Penal Code, which enlarges the liability in environmental protection and some liabilities were removed and modified in laws not parts of the Penal Code, there is doubt about the expediency of these regulations respecting the serious injuries inflicted on the environment due to corporate interests and profit greed. Cf. also "FRG--Protection for the Polluting Corporations Instead of Environmental Protection," NEUE JUSTIZ, 1980, No 12, p 551.

7. The water management law provisions were rescinded in accordance with Article 3 in the second penal code amendment.

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COASTAL AREA THREATENED WITH ECOLOGICAL DISASTER

Warsaw PRZEGLAD MORSKI in Polish No 4, Apr 81 pp 49-53

[Article by Anna Sobczak]

[Text] Three regions in Poland are threatened with exceptionally great, constantly growing ecological disaster. These are the Silesian mining-metallurgy region and the two industrial centers at the estuary of the two largest and most heavily polluted rivers, which carry sewage from practically the entire country to the sea: Gdansk and Szczecin.

A report on this subject, the eastern coast, was presented in 1973 by the Gdansk WRN [Provincial People's Council] Presidium to the chairman of the Council of Ministers, among others. The waters of the Gdansk and the Puck Bays, as well as those of the Wisla Bay, for all practical purposes should be closed to tourism and the economy, for they constantly threaten people with the eruption of an epidemic of diseases. The report speaks of the radioactive properties of phosphorous-gypsum stored under Gdansk by the municipal Phosphorous Fertilizer Plants. Dust from the Siarkopol Plants and refinery gases are transforming the marshy soils on the left bank of the Wisla, until recently fertile, into a wasteland.

Reports on the coastal natural environment reaching the press from time to time are only fragmentary. Hence, it is time for us to present a more complete picture of the situation.

The Bay

There is still that glimmer of hope that permits us to say that "not everything had died" in the waters of the Gdansk Bay. One wonders how some forms of life still exist in it, since it bears all the marks of an ecological disaster. In places its bacteriological pollution exceeds the admissible contents of pathogenic bacteria in open waters 1,000-fold. The sudden increase in salts [text reads "coli" for "soli"] causes us to assume that the amount of bacteria appearing in conjunction with them is also growing, causing such human diseases as dysentery. The cause of this is, above all, the lack of biological sewage-treatment plants in the Gdansk region. As a result, the Tri-City area alone is forced daily to dump approximately 220 water-wagonfuls of municipal sewage that has been treated only mechanically into the sea. Puck dumps over 3,000 m^3 of completely untreated sewage a day and Jastarnia, 100 m^3.

In addition to the bacteriological threats in the bay are threats of a physical-chemical nature. They are present in the water as highly poisonous organic and heavy metal compounds, primarily mercury, lead, cadmium and arsenic, in amounts exceeding the allowable norms many times over. The sea contains more and more detergents and petroleum-derived substances. The Wisla is their major source (70 to 96 percent), followed by ports, shipyards, marine transport, local industry and the municipal economy.

The consequences of the stream of poisons flowing unobstructedly into the Baltic has already been described. The Tri-City beaches are closed. Eels are dropping off in large numbers; the tide washes them onto the land by the thousands; they are rotting, threatening the eruption of an epidemic. Salmon trout and salmon are disappearing, and the herring are becoming diseased. Cod, which feeds on the poisonous sewage, is becoming the carrier of many diseases. The presence of mercury, lead, cadmium, arsenic, zinc, copper and iron compounds as well as polychloric pesticides (occurring in plant pesticides) hazardous to human health has been detecteddin cod muscles and liver. Entire varieties of marine plant life are perishing. Aquatic bird life is being killed off by the so-called oil plague.

The state of inland waters of the Gdansk coast is somewhat better (if we do not include the Wisla). Nonetheless, since 1973, when the WRN report appeared, their state has decidedly worsened. Six years ago, of the 1,400 kilometers of the 8 most important rivers in the Gdansk Voivodship, 810 kilometers were of class 1 purity (suitable for consumption and the raising of salmon trout), 440 were of class 2 purity (suitable for bathing) and 150 kilometers were of class 3 purity (designated solely for the needs of industry and serving agriculture). In 1978, the lower section of the Wisla finally lost its class 2 status. A year later, of the 1,400 kilometers of coastal area rivers, only 730 kilometers were class 1 waters.

Meanwhile, waters rapidly began to develop, which when tested for quality would have to be put into a new category of waters, class 4 or class 5 purity. This refers to the Wierzyca from Stargard to the Radunia estuary, with numerous water intakes for the Tri-City, among other waters. In 1975 these Wierzyca waters were practically crystal clear, while in places it waters are of class 3 purity.

The state of lakes is relatively good. Of approximately 600 lakes, only a few have become totally polluted (including the Karczemne and Klasztorne Lakes near Kartuzy and the Wierzysko and Grabowskie near Koscierzyna), caused by the introduction of untreated municipal sewage. A number of lakes are losing their class 1 purity and are becoming class 2 waters (including the popular Malsz Lake, due to nearby vacation spots, which for the most part are not generally equipped with treatment plants).

The major cause of inland water pollution is the increase of marshy elements in them with nitrogen, phosphorous; i.e., nutriments for field plants. The consequence of this is the phenomenon of autotrophy, the rampant development of plant life. When the plants have drawn the oxygen from the water, they quickly decay and die. No less a menace is the untreated sewage eliminated by farming, by plants serving farming and by local industry. Small streams and canals that are not catalogued and controlled are also a meance; production waste materials from POM [State Machine Stations], dairies and private farms are illegally dumped into these waters.

Creeping Poisons

A considerably greater ecological threat to the coast than the purity of inland waters is municipal and industrial waste. The construction of suitable dumping grounds is extremely costly and, in the case of Gdansk or Gdynia, it is practically impossible due to the lack of space. Meanwhile, overloaded storage sites for wastes threaten the contamination of subterranean waters, which are a current source of drinking water for the coastal area.

The best (and perhaps the only) solution to the problem of liquidating municipal waste is the construction of a modern trash incinerator. While this would cost still more than regular dumping grounds, its costs would be returned rapidly. This is because incineration produces energy, construction materials and sought-after heavy metals.

A more difficult problem is the liquidation of industrial waste. At the GZNF [Gdansk Phosphorous Fertilizer Plants] storage sites, over 7 million tons of phosphorous-gypsum have been collected over the 12 years of the plant's existence. Approximately 800 tons are added to this monthly. In such a mass, they may possess radioactive properties. They are already causing diseases among humans, cattle and poultry and they are exhausting the marshy soils. Noxious compounds penetrate deep into the soil, spreading in all directions at a rate of 20 meters a year. Meanwhile, scarcely a few kilometers from the storage site is a water intake for the southern sections of Gdansk. Thus, if within 2 years the Ministry of the Chemical Industry does nothing toward liquidating the phosphorous-gypsum storage site, GZNF must be closed.

Of equal urgency is the construction of a group of storage bunkers for industrial waste with strong toxic properties. The 32nd proposed site for dumping grounds for Tri-City electric power and heat-generating plants has been rejected, since like the 31 former sites it presented an ecological threat. Thus, ashes are dumped into a former lake in Letnica, which itself is of a limited capacity and will soon be filled. Much points to the fact that the ashes will have to be transported to a place several tens or hundreds of kilometers away. Then the transportation itself will cost more than the entire present cost of the electrical power and heat produced for the coast.

We Can Still Breathe

Since 1973, there have been a 40 percent increase in dust emissions and an increase in gases of a little over 130 percent (in view of the 1,000-fold increase in water pollution). Moreover, this menaces only relatively small areas surrounding the polluters themselves: Siarkopol, GZNF, electric power and heat-generating plants, the transshipment port for apatites and some obsolete production plants such as Fala, Olowianka and the gasworks in Gdansk. Each year these enterprises emit several hundred tons of poisonous compounds: sulfur dioxide, fluorine, nitrogen and hydrocarbons, as well as twice this amount of dust from heating plants. They are a nuisance to the monuments in Gdansk's Old Town. The air pollution over Sopot and Stargard is growing, due to the excessive number of small boilers in these cities. The cause of this pollution is primarily the lack of dust extractors (electrofilters and cycle dust extractors) on the market, the inefficiency of the existing treatment equipment in a number of plants (primarily in GZNF) and the poor quality of heating fuel.

The problem of transportation pollutants to the atmosphere must be treated separately. They are especially hazardous to human health because they contain a lead compound. After only an hour of exposure, they cause symptoms of poisoning in militiamen controlling traffic at the intersections of main Tri-City streets, which attests to their very high concentration. Meanwhile, inspections conducted by the UW [Voivodship Office] Environmental Protection Department at transport bases invariably show that over half of all truck motors have inefficient carburetors and exhaust systems. Thus, we must build beltways more quickly, among other things. The Tri-City beltway has awaited a second highway for years, as well as decent approaches to city centers.

What Should Be Done?

What we should do, and when, to halt the progressive pollution of the environment in the coastal area is something we have known for a long time. The corresponding programs, prospects and detailed calculations have been in the hands of the Voivodship Office for many years. The question is only, Who is to do this and why?

During the next 10 years, it is indispensable that we build the following for water pollution control: The Wschod (1 billion zlotys), Debogorze (450 million zlotys) and Swarzewo (380 million zlotys) biological treatment plants, the Tczew treatment plant (390 million zlotys), the GZNF treatment plant (700 million zlotys) and a sewerage system for Gdynia-Orlow (200 million zlotys). Of secondary importance according to the priorities are biological treatment plants for Stargard and Koscierzyna; a sewerage system for the livestock feeder farms in Strzebielina, Niedamowo and Grabowo; and a Morena sewage collector to protect water intakes in Straszyno.

With regard to protecting the atmosphere, we must first liquidate small boilers and obsolete plants. Moreover, we must build equipment for limiting the emission of fluorine from GZNF (200 million zlotys), for the airtight sealing of transshipments of sulfur (50 million zlotys) and transshipments of apatites in the Gdansk port.

Investments linked with the liquidation of industrial and municipal waste will be considerably more expensive. Solving the phosphorous-gypsum problem will cost approximately 1 billion zlotys. The cost of building a storage site for EC-III in Gdynia will be as much as 1.3 billion zlotys, and that of building a storage site for EC-II will be nearly 400 million zlotys. A trash incinerator will cost 300 million zlotys.

In other words, in order to compensate for the many years of neglect and in order to barely check the process of the destruction of the natural environment of the coast, in the course of the next 10 years we would have to do work costing 20 billion zlotys. The allocation of 2 billion zlotys "for yesterday" to complete the Wschod and Debogorze treatment plants and the construction of Swarzewo is wholly indispensable. Meanwhile, the voivodship has received several tens of millions of zlotys for this purpose, in addition to which processing capacities are insufficient.

Thus, the fatal errors in investment planning and in the distribution of funds for particular tasks are bearing consequences. We have built new foundries, ports, refineries and opera houses, we have rebuilt castles, at the same time cutting down the branches on which the biological security of inhabitants hung. Today it is difficult suddenly to allot several tens of billions of zlotys to protect natural surroundings. But the whole drama of the situation lies in the fact that these funds must be found to give us strength and to get the country out of the crisis, so that we can live through the worst under the best conditions.

Investments linked with the protection of the natural environment should be first among the tasks that we must execute in the near future. They should be given at least the same priority as the food economy and housing construction. This opinion must be shared by all of the people and offices responsible for the future of the coast and the country.

8536
CSO: 5000/3009

HOSTILITIES AFFECT GARBAGE DISPOSAL, WATER SUPPLY

London AL-HAWADITH in Arabic No 1322, 5 Mar 82 p 44

[Article by 'Adnan Karimah: "Twenty Million Lebanese Lira To Clean Up Lebanon's Garbage"]

[Text] The war, now in its 8th year, has not prevented Lebanon from concerning itself with a major project involving the control of flood waters, waste water, and solid wastes. The thinking about it goes back to 1950 because of its connection with the lives of our fellow countrymen, especially after life-threatening dangers resulted from sewage water mixing with drinking water.

Since such a project requires many studies and an army of experts as well as several sources of financing, something that takes a long time, the government decided through the Council for Development and Reconstruction headed by Dr Muhammad 'Atallah to adapt to the present reality imposed by the circumstances of the war and carry out small but urgent projects to dispose of garbage. It decided to build an incinerator with a capacity of 20 tons an hour in al-'Amrusiyah in al-Shuwayfat region, especially after the security situation made it clear that sometimes garbage could not be hauled from West to East Beirut where the first incinerator is situated in al-Karantina because the lack of a plant in the western section led to garbage piling up on sidewalks thereby affecting public health and polluting the environment.

An agreement was reached on building the 'Amrusiyah plant at a cost of about 20 million Lebanese liras in January 1980, with the expectation that it would be completed by mid-1982. The International Agency for Development shared in the purchase of some vehicles and essential equipment to move garbage from West Beirut to the new incinerator.

The garbage problem is tied up with another health problem--flood waters and waste water--which demands the devising of a plan to "cleanse" Lebanon of these hazards to public health. The Council for Development and Reconstruction was aware of this when it signed an agreement with the World Health Organization [WHO] in September 1979 to implement the plan whose objectives are to:

(1) Compile a general orientation map of all Lebanese land;
(2) Do basic engineering and feasibility studies and do special studies on pollution, ground water, and water quality and recommend immediate improvements;

(3) Study possible sites for draining waste water;
(4) Train the personnel needed to execute the plan.

After contacts were made with the development program of the United Nations, the latter (after reaching an agreement with the World Health Organization) commissioned an international agency to invite bids to study the plan jointly with experienced international companies. As a result of the study, six companies with the requisite qualifications were chosen. Lebanon selected one of them, the American firm (Kent, Draystar, McKay). This company worked with a joint Lebanese staff for 3 years during which time a plan for the greatest project in Lebanese history was completed.

The WHO was not satisfied with this alone, but requested the appointment of neutral experts to study and comment on the finished plan. It was agreed that these experts should discuss the plan for 2 weeks, the first week in Beirut and the second in the United States. The last day of the second week was the most important because an international conference was held last 22 January in the headquarters of the American company in Boston. It was attended by representatives of the International Bank for Development and Reconstruction, officials from the UNDP, WHO, AID, a group from the European Common Market, and Dr Muhammad 'Ata'allah. They studied the project, estimated to cost about 20 billion liras, and the possibilities of financing it through international banking institutions.

Dr 'Ata'allah said to the conferees: "We didn't come here to collect 'checks' to finance the project at the end of the conference. Rather, we came to tell you: This is what we have...You may find that strange, for you hear there is a war going on in Lebanon with fighting and killing...and we say to you: We are concerned at the same time to do all in our power to carry out construction and development projects for our country. The project before you is not just for a part of Lebanon but for all Lebanon. It may be the most important project to demonstrate the unity of the state to all the Lebanese."

The experts favored execution of the project. Likewise, the representatives of the international banking institutions showed their readiness to share in the financing. Dr Mahmud Salayman, representative of the WHO (for the Middle East), described the project as the first of its kind in the world because for the first time a state is offering a national plan to control flood waters, sewage, and garbage. It endorses this great project which is expected to take 10 to 15 years to complete. It is worth noting here that its cost in today's prices is about 20 billion liras (more than $4 billion), but due to inflation in the years it will take to execute the project, the experts estimate the cost will increase to about 50 billion Lebanese liras, as Dr 'Ata'allah says.

We may reasonably conclude from this that the plan is long-range, but what is the first-priority stage to be carried out?

Dr 'Ata'allah answers: "While drawing up the plan we discovered very serious things that must be attended to without delay, e.g., places where sewage mixes with drinking water, a life-threatening danger to the public. We passed a bill on urgent projects that cannot be delayed. It turned out that they will cost $200 million (about a billion Lebanese liras). "We are now concentrating on two elements:

(1) Creation of a staff on the Council for Development and Reconstruction to perform the functions of the central agency responsible for developing the project;

(2) Requesting the cabinet to allocate 300 million liras to begin executing the urgent projects. However, the remaining amount, i.e., about 700 million liras, is to be obtained from sources of international financing."

It appears that the program is being implemented swiftly. Dr 'Ata'allah comments: "In a month and a half the required staff will be in place. We will then begin to receive blueprints for the urgent projects from the American company preparatory to studying them and beginning their implementation."

Some may criticize the implementation of such a large project that will cost billions of dollars while there are more important matters that threaten our fellow countrymen every day under the circumstances of war and they may be more deserving of financial support! But it must be admitted here that the war has revealed large and important "weak spots" in Lebanese life. It is clear that the state was laggard in previous years in ensuring the minimum requirements of this life, something that demands short and long term plans that include many of the construction and development projects that interact with the energy and daily work of our fellow countrymen. While they are managing well with food and drink, the state must be alert to their health, whether they are sick or well, because true development is development of the human element, the basis of all development work and in all kinds of fields!

5214
CSO: 5000/4706

POLLUTION PROBLEM NOTED

Rabat ALMAGHRIB in French 7-8 Feb 82 pp 1-2

[Text] Pollution of the city of Mohammedia has reached the danger point.

Mr Taieb Bencheikh, an independent representative and former minister of planning and regional development, sounded the alarm during a round-table discussion organized by the association of former students of the city's educational establishments.

Emergency Plan Necessary

Mr Bencheikh was not satisfied just to point out the seriousness of the problem; he also stressed the need to establish an antipollution program as soon as possible.

Mohammedia has not made the transition from a seaside resort to an industrial center as wisely as it should have. Thus it has become an industrial producer, but especially a big producer of pollution and harmful waste, almost without anyone being concerned about the damage caused.

Referring to a field study conducted under the supervision of and in cooperation with Mr Mustapha El Moudden (chairman of the Parliamentary Commission on Industrial Plants), Mr Bencheikh recalled the drawbacks of concentrating large power plants in Mohammedia. Mr Bencheikh noted that the city actually contains 40 percent of the national oil stock and the largest electric power plant in the kingdom (50 percent of national consumption).

Mr Bencheikh also pointed out that following a series of contacts with the directors of the city's various petrochemical plants and factories, it was confirmed that antipollution measures are nonexistent or ineffective. This is also the case of protective measures against fires or accidents.

The danger is not just for the city of Mohammedia alone, as the situation is similar for all coastal cities in the area.

Preventive and protective measures are lacking everywhere, in fact. Like Mr Bencheikh, we need only recall the explosion which occurred on board the Iraqi oil tanker "Al Moutanabi" off the coast of Mohammedia, and the weak effort to combat the ensuing disaster, to be convinced of this.

Equally, if not more, serious is the fact that even Casablanca is threatened and has no recourse.

When asked about these problems during the discussion, the minister of energy could only confirm Mr Bencheikh's statements.

The threat exists; it is real; it is serious; it may be disastrous. But the minister of energy, visibly embarrassed, had no recourse other than to change the subject.

As though neither he nor the government were concerned.

So then, who should be concerned about this?

11915
CSO: 5000/5010

PROFESSOR SEES INCREASED THREAT OF 'ACID RAIN' FOR NORDICS

Helsinki HUFVUDSTADSBLADET in Swedish 9 Mar 82 p 4

/Article: "Acidification Threat to Forests and Waters"7

/Text7 The acid rain over our forests--the precipitation of sulfur from primarily oil and coal-burning installations--sooner or later threatens to affect the forests and lumber production. The question is only: when? Additional research is needed in this area.

"For a short period the sulfur causes growth in the forets, but this is purely a 'dope effect,' for production drops after a few years." This was said by Prof Carl Olof Tamm of the College of Forestry in Sweden, when representatives of forestry and forest research discussed the acidification problems some time ago at a Nordic conference in Falun.

Acidification of the woodlands is worrying the Swedish Forest Service, among others.

"We must act early in order to turn the development around," director-general Lennart Schotte emphasized at the conference. "International conventions must be established in this field."

Joint Opinion

"It would be good if we could establish a joint forest opinion. First in the Nordic countries, then in all of Europe. Forestry must take an active role," says director-general Lennart Schotte. "The acidification has a creeping negative effect on the productive forest areas."

Acidification is a problem which transcends borders, it says in the conference resolution. It is clear that a large portion of the acid rain over Scandinavia comes from industrial regions on the European continent and in Great Britain.

The problem is worst in the southwestern parts of Norway and Sweden, where the natural resistance of the ground is lowest due to the nature of the underlying rock. Nordic foresters hope that their colleagues in European forestry will cooperate in working to clarify the causes and effects of the acidification.

"At the same time we ourselves must prevent additional acidification of the soil and water," it was stressed at the conference. "In a longer perspective the supply of future generations is threatened if we do not act now."

Emissions Must Be Attacked

"The emissions must be attacked at the source," it says in the Falun resolution. And the sources are primarily combustion facilities for oil and coal. If the discharge of air pollutants were to decrease, several direct-acting damaging effects could be avoided.

In his address Prof Folke Andersson of the Institution for Ecology and Environmental Protection of the Swedish College of Agriculture stated, that there is a clear connection between the quality of the forest lands and the basic status of the soil, and there is also indication that biological activity in the soil decreases with continued acid rain.

"The acid rain leads to a decrease of the supply of basic cations in the soil. In the long run, in particular as regards the upper soil layer, this means an acidification which affects the organisms and their activity. In a longer time frame the result is a reduced supply of nitrogen. In all probability this will not be compensated for by the now increasing nitrogen precipitation. It is most likely that we must anticipate reduced forest production. When this will occur and the extent of it is difficult to predict. Research is being concentrated on these issues," Professor Andersson said.

The continuing acidification also involves waters, in particular small lakes with a low nutrition level. The result can be that the number of species of algae and water plants decreases, as well as the stocks of fish.

Soil acidification can only be stopped by limiting air pollution. For the lakes liming may be a neutralizing aid--but it gets costly in the long run.

The villain in the acid drama is the small hydrogen ion, which has acidifying properties. When the concentration of hydrogen ions becomes too high, the preconditions for life of animals and plants change. The number of hydrogen ions is measured in pH. The greater the concentration of hydrogen ions, the lower the pH value. The normal value is pH 7.

11949
CSO: 5000/2078

GOVERNMENT WANTS ENVIRONMENT MINISTRY BY 1983

Helsinki HELSINGIN SANOMAT in Finnish 26 Mar 82 p 12

[Article: "Conflict on Environmental Ministry"]

[Text] The parliament is awaiting a new law on the establishment of an environmental ministry, which will divide opinions sharply within the parliamentary factions. Interior Minister Matti Ahde (Social Democrat) talked about the establishment of an environmental ministry in the parliament on Thursday. It is hoped that the work of the ministry will begin in the beginning of next year. At an inquiry session in the parliament Matti Ahde answered Conservative Party's Eeva-Maija Pukkio's question concerning environmental administration.

According to Ahde the establishment of an environmental ministry is an especially urgent task.

"The intent of the government is that an environmental ministry could begin its work next year. For this reason the government will bring up questions in principle concerning this issue for resolution by the parliament in the very near future," stated Ahde.

Ahde explained that the government has two alternatives: the establishment of an envrionmental ministry will be brought before the parliament either in connection with the supplementary budget or a decision will be made on the basis of a government report.

"The government will present this issue to the parliament in the spring and hopes that the parliament will be able to give an answer in the spring so that decisions concerning the establishment of an environmental ministry can be included in the 1983 budget," emphasized Ahde.

A Rare Report

Most likely the method for discussing an environmental ministry will be a government report. It is intended to bring it up for committee discussion in the parliament.

In recent times a government report in the parliament has been rather rare. All in all governments have presented the parliament with approximately 30 reports. The last report was in 1974 and it concerned energy issues.

Usually, a report concludes in a measure of government confidence. This time it is not intended that the report will measure government confidence, but it will apparently be brought up for discussion by the constitutional committee in the parliament and after that the parliament will make its own decision.

SDP and Center Party Opposing Each Other

Demands were made for an environmental ministry all through the 1970's. Its establishment was outlined in the initial phases of Kalevi Sorsa's (Social Democrat) first government.

The Social Democrats and the Center Party have opposed each other in this question. A similar situation is now emerging.

Among the large parties the SKDL [Finnish Peoples Democratic League] and the Conservative Party in addition to the SDP have promoted the establishment of an environmental ministry in various connections. But, for example, there is also another feeling in the Conservative Party.

A conflict concerning principles is emerging with respect to the area of jurisdiction for the new ministry. Center Party Chairman Paavo Vayrynen submitted to the idea of a ministry last fall, but explained his position by stating that he meant a rather narrow form.

The conflict continues on this basis even now. The Center Party is promoting the narrowest alternative, the SDP the broadest.

Among the alternatives presented to the parliament the broadest concerns a model according to which the environmental protection section, the planning section, and the housing office of the Interior Ministry as well as conservation and water management affairs of the Agriculture and Forestry Ministry would be turned over to the environmental ministry. The Center Party has carefully protected the interests of the Agriculture and Forestry Ministry by striving to keep its area of jurisdiction intact.

According to another alternative housing affairs would remain outside of the environmental ministry, but planning affairs would be included.

According to a more narrow alternative neither housing nor planning would be turned over to the environmental ministry.

Environmental protection affairs will apparently come up next for discussion by the ministerial committee on area, community, and environmental policies.

The SDP's parliamentary faction took a stand on an environmental ministry on Thursday. The faction urged the immediate establishment of the new ministry and hoped that the issue would be brought before the parliament as soon as possible.

10576
CSO: 5000/2087

STUDY CONFIRMS HARMFUL ENVIRONMENTAL EFFECTS OF PEAT FUEL

Helsinki HELSINGIN SANOMAT in Finnish 25 Mar 82 p 6

[Article by Jyrki Maunula: "Study Surprisingly Confirmed That Peat Pollutes Atmosphere"]

[Text] Hameenlinna--The use of peat as a fuel is not at all as recommended as has been thought so far. According to a study peat contains and disseminates alarming amounts of sulphur into the atmosphere when burned as a fuel in thermal power plants.

The study, which was just completed, discloses that 30-percent contents have been found in peat from Finnish bogs, amounts of 10 and 20 percent are usual.

The average amount of sulphur in heavy fuel oil is 2.3 percent. According to the stipulations sulphur contents exceeding 0.3 percent must be report on a product label.

We do not do this for the simple reason that no attention is given to explanations concerning the amount of sulphur. Purchasers of peat are only primarily interested in the decomposition of a bog and in the ash content of peat.

"Now that the amounts of sulphur are known, immediate agreements should be reached so that plants burning peat would not emit sulphur in the vicinity of housing. In addition, every bog which is to be exploited should be carefully analyzed in advance," states Doctor of Agriculture and Forestry Erkki Kellomaki, environmental protection inspector of the Hame Provincial Government. In his opinion those bogs in which uranium or other detrimental minerals have been observed should unconditionally be placed under an excavation ban. (In certain tests the uranium content in peat was 0.8 percent, and the content in the ash was 1.5 percent.)

Finland Is Sweden's Guinea Pig

The peat study on Finland's bogs, which has caused a commotion, was conducted by researchers Satu Huttunen and Marketta Karhu of Oulu University. The study was funded by the Swedish Environmental Protection Office.

This is apparently a Swedish desire to obtain research information before they themselves begin the burning of peat. We began using peat during the war almost without any preliminary studies on any possible detrimental effects," states Kellomaki.

Kellomaki states that he was astonished by the results, which disclosed the percentages of sulphur:

"Peat is definitely more detrimental than heavy fuel oil, which has been subjected to abuse."

The Deeper The Worse

From the report by Huttunen and Karhu it becomes apparent that sulphur contents in bogs increase in general the deeper it becomes necessary to dig for the peat. On the surface of a bog the sulphur content is only about 1 percent, at a depth of 3 meters it is frequently doubled, and at a depth of 5 meters it is 9--10 percent.

Contents of 30 percent were found from bogs along the coast of the Gulf of Bothnia, the so-called sulphide and alum areas.

The study also indicated that the string bogs in northern Finland have higher sulphur contents than the raised bogs in sourthern Finland.

"Apparently, peat should be dug from the raised bogs and only from the surface layers."

The demand clearly conflicts with practice: the country's northern bogs have been exploited the most and the intent has been to go as deep as possible, all the way down to the decomposed layers of peat.

"We have apparently been rather wide eyed in our enthusiasm to develop domestic energy. This has commenced without sufficient studies. Everyone has thought that peat is free of pollution and is the best to burn."

The sulphur in burned peat changes into sulphur dioxide and pollutes the environment. It has exactly the same negative effects as the sulphur in oil: the soil and water systems become acidified. Sulphur pollution kills vegetation and fish.

Danger of Cancer From Emissions

Satu Huttunen also wants to add that in his opinion attention should also be given to the emission of particles caused by incorrect burning of peat.

"Above all, the proportion of polyaromatic hydrocarbons should be determined since it is known that they are carcinogenic in people."

Huttunen hopes that this study would initiate a constructive discussion on the apparent detrimental effects of peat and would result in the necessary decisions. If peat burning plants are not located at a distance from housing areas, their smoke stacks should be equipped with an air purifier. In addition, the smoke stacks should be sufficiently tall.

"The situation will become even worse since the surface layers of peat bogs already being exploited are becoming exhausted and it is becoming necessary to dig deeper into the lower strata where sulphur and metal contents increase drastically."

In Kellomanki's opinion it is worthwhile even thinking about conserving Finland's bogs until the time when the world's oil reserves are indeed exhausted.

"In the interim we would be able to analyze our bogs thoroughly and develop technical procedures for making their exploitation safer."

According to him the emphasis in the use of domestic energy should be turned toward the use of biomass. Twigs and branches as well as fast growing willows are renewable natural resources and they do not contain near the amounts of metals or sulphur as peat.

Peat Was Thought to Be Safe

"It is quite a surprise to learn about such large contents of sulphur," states Section Chief Olli Ojala of the Environmental Protection Section of the Interior Ministry. He states that we have thought that there is very little sulphur in peat, less than 1 percent.

"However, much depends on the type of sulphur in peat."

According to Ojala in implementing a new air protection act the sulphur content of peat must be taken into consideration: before peat is allowed to be used as a fuel, a clarification must be made with respect to its composition.

Sulphur Limits to Be Determined

Interest in the emissions of power plants using various fuels should be expressed in other places also. A work group set up by the Ministry of Trade and Industry is in the final stages of its own study and will have its report ready by this spring.

The work group preparing the air protection act, which will come into effect in the fall, has become involved in this matter. Apparently, permissible limits for emissions of pollutants will be included in the law. This is also already partly required by those international agreements approved by Finland in which permission has been given to inspect pollution-bearing clouds moving from one country to another.

10576
CSO: 5000/2087

BRIEFS

HAZARDOUS WASTE PLANS FIRMED--The plan for the construction site of a future hazardous waste plant has been confirmed in the Interior Ministry. The ministry has also decided that the plan will be implemented in spite of possible protests. The City of Riihimaki can now determine the division of building lots for the area, after which the lot for the hazardous waste plant will be noted in the registry and a construction permit can be issued for the plant. The goal of Suomen Onglemajate Oy [Finnish Hazardous Waste Company] is that the plant will be operational by December 1984. However, construction may be delayed by several months. It is doubtful that the municipal government of Riihimaki will confirm the division into building lots before an appeals period of 1 month has passed since the ministry's decision. The highest court of administration can stop the implementation of the plan because of possible complaints. Inasmuch as the ministry's decision remains in effect, the division of building lots and the registration of the lot will move quickly since there is only one lot in the whole area and the city has agreed to treat the issue of the hazardous waste plant with haste. In addition to a construction permit, the hazardous waste plant will require a permit for the treatment of waste, which will be issued by the Hame Provincial Government. The company has already submitted an application for a waste treatment permit to the provincial government. A decision will be made next fall. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 27 Mar 82 p 10] 10576

BACTERIA, POLLUTION DESTROYING FISH IN LAKE MALAREN

Lake Feeds Stockholm Water Supply

Stockholm SVENSKA DAGBLADET in Swedish 24 Mar 82 p 8

[Article by Ola Sall]

[Text] The same kind of water deterioration that killed off life in Laholm Bay has struck the northern part of Lake Malaren, where fishing has declined sharply. The water is brown in color and smells bad.

Coliform bacteria and pollution have increased sharply. It is the lake system extending from Staket up to Ekoln, near Uppsala, that has been affected. Analyses of the water from Skofjarden show that the water is seven times browner than normal Lake Malaren water.

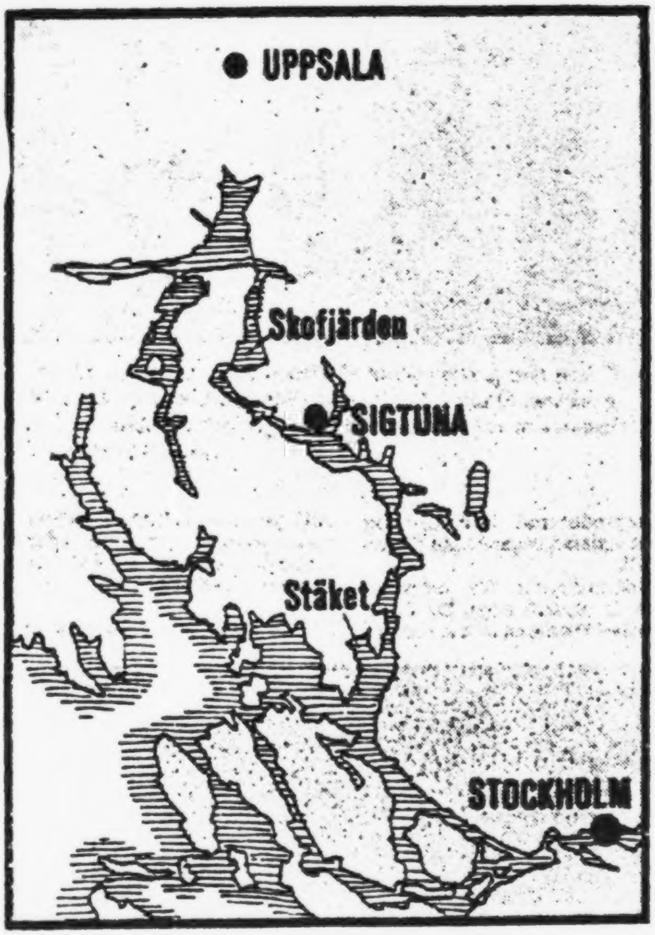
The iron content is 10 times higher than normal. Phosphate content, which in the rest of the lake stands at around 20 milligrams per cubic meter of water, is three times as high in the inlet. And the content has been gradually increasing over the past 5 years.

The municipality of Upplands Bro has asked the County Government Board for a report on the steps the latter has taken to combat the water's deterioration.

The County Government Board has replied that the National Environment Protection Board's water laboratory has been called in and that the National Environment Protection Board will submit a report later this spring to the Malaren Committee, a joint consultation organization that advises county government boards around Lake Malaren.

The waterworks in Gorvaln, which supplies northern areas of Greater Stockholm, has been forced to take special steps to cope with the deteriorating water quality. One such step has been to increase the amount of active carbon it uses to remove the smell and taste.

Waterworks officials give assurances that the drinking water has not been affected.


UPPSALA
Skofjärden
SIGTUNA
Stäket
STOCKHOLM

Water deterioration may be due to the leaching of fertilizer from farmland surrounding the Malaren inlet. Unusually high levels of pollution have been encountered from Staket up to Ekoln near Uppsala.

"Catastrophic"

Folke Jacobsson, a chemist at the water laboratory at K-Consulting, the firm that was called in by a property owners association in Skofjarden, says: "The situation in the northern part of Lake Malaren is beginning to turn catastrophic.

"Life at the bottom of the inlet has sometimes disappeared completely.

"Before the waste water treatment process was improved 10 years ago, large quantities of phosphates from detergents were discharged into the lake. The phosphate settled on the bottom and lodged in the mud."

Fertilizers

Folke Jacobsson continues: "As long as the oxygen content in the lake remains normal, the phosphate stays in the mud. But when the oxygen content drops, phosphate and iron are released into the water."

Torsten Ahl of the National Environment Protection Board's water laboratory says: "One explanation may be the heavy amounts of precipitation in recent years, which leached fertilizers from the surrounding farmland."

When fertilizer gets into the water, the growth of algae increases. When the algae die, the oxygen in the water is used up, and more phosphate is released from the bottom.

Torsten Ahl does not believe that the Malaren inlet will die completely.

He says: "The character of the inlet has changed, but there is no reason panic. For example, the phosphate content was considerably higher in the 1960's, before sewage treatment was improved."

Fishing Halted After 35 Years

Stockholm SVENSKA DAGBLADET in Swedish 24 Mar 82 p 8

[Article by Ola Sall]

[Text] After 35 years as a fisherman, Rolf Nordwall is being forced to give up fishing and go to work in the forest. The pike-perch has disappeared from his fishing waters in Staket. The only thing that comes up in his nets is sticky algae.

Rold Nordwall says: "Five years ago I began noticing that the water was getting worse and worse. But it has never been as bad as it was this winter.

"The algae used to bloom for a couple of weeks in the fall, and then I would have to stop fishing temporarily. This time, the nets were smeared with algae throughout the fall. All my fall fishing--about 1 ton of pike-perch--was ruined."

Rolf Nordwall believes that the pike-perch has gone out into Lake Malaren to get away from the cloudy water.

The supply of pike and vendace has also declined.

Rolf Nordwall normally sets 120 nets on a winter day. Now he sets out a few nets occasionally to catch fish for his own family's consumption.

Last Sunday he set out 12 nets. That would normally yield about 25 pike-perch. This time there were three pike-perch in the nets.

11798
CSO: 5000/2096

GOVERNMENT TO PROPOSE TOUGHER RESTRICTIONS ON EMISSIONS

Stockholm SVENSKA DAGBLADET in Swedish 3 Mar 82 p 6

/Article by Bo Ostlund: "Government Proposal: Sharp Limit on Sulfur in Coal Burning"/

/Text/ The government will propose a sharp increase in sulfur filtration for future coal burning--a maximum of 600 tons sulfur will be permitted per plant and year in 1990.

It is also proposed that the coal industry should receive a new government subsidy for desulfurization installations, financed by a new surcharge on oil next year.

The government's sulfur bill now lies ready at the Government Offic Building after having passed through the Coordination Office, since the creator of the bill, Agriculture Minister Anders Dahlgren, and Energy Minister Ingemar Eliasson earlier were not able to agree on the new environmental regulations.

The energy and industrial people at the government offices and at the Departments of Industry, Labor Market and Energy previously were not equally prepared to go as far in environmental demands as the Center Party with Anders Dahlgren at the head, who now comes very close to the discharge limits favored by the National Environmental Protection Agency, Last fall the Environmental Protection Agency demanded a maximum of 400 tons of sulfur per year and plant.

Stiff Opposition

The government's future sulfur levels will meet with stiff opposition:

a) The Conservatives prefer that last year's parliamentary decision about 1,600 tons of sulfur annually in combination with liming measures for the prevention of acidification should become valid in order to speed up the introduction of coal.

b) The coal and power industry (the oil companies, the Association of Heating Plants and the Swedish Coal Consortium, among others) has already warned the government in several statements against going too far with special Swedish measures; it might become difficult, among other things, to find a working technology or alternatively enough low-sulfur coal.

c) The tenants' organizations and the Union of Local Authorities have warned of excessive increases in housing costs if the strict rules are allowed to take effect.

Social Democrats Also Oppose?

The Social Democrats' position is still an open question, but initial Social Democratic reaction to the requirements put forward by the Environmental Protection Agency in December, which the government now comes very near, is very negative:

"There is risk that it will become a very expensive way to make environmental gains," says Lars Liljegren, who is the Social Democrats' representative to the Oil Substitute Delegation and one of the party's experts on energy questions.

"In the Oil Substitute Delegation I have instead advocated that Sweden should stay with 1,600 tons of sulfur per year and plant, as the Riksdag recently decided, and in addition concentrate on desulfurization of oil, which is cheaper than desulfurization of coal, and increased liming of lakes and watercourses."

'PR Policy'

Lars Anderstig of the Tenants' National Association is bitter:

"We protest against the tenants' having to pay the costs of the additional filtering measures which the government plants to submit."

Anderstig calls the tough demands by the government and the Environmental Protection Agency an "international PR policy."

Two Steps

In the government's sulfur bill, which has been announced for 10 March, but which may be somewhat delayed having passed through the Coordination Office several times, the filtering demands are reinforced in two steps: 800 tons of sulfur will be permitted until the end of 1989; after that, the discharge of at most 600 tons of sulfur per plant and year will be permitted.

'Coal Fund' Results in More Expensive Oil

In order to aid the industry in building desulfurization facilities, a new state subsidy is proposed, financed by a new extra surcharge on oil--10 crowns per m^3 oil--levied after 1 July 1983.

The new "coal fund" will be administered by the new Energy Agency.

In the sulfur bill the government also proposes greater efforts on liming. The responsibility for this is placed on the regional governments.

11949
CSO: 5000/2084

BRIEFS

WHO WARNS OF FUMES--Greater demands on emission controls for automobiles or a sharp decline in auto traffic in Stockholm. This is necessary if the nation's economy starts to grow again. Otherwise, the air over large portions of Stockholm's street network will exceed the limit values for air pollution set by the World Health Organization (WHO). This is the result arrived at by the state Automobile Emissions Committee in a study of the traffic and exhaust fume situation in the year 2000. If, on the other hand, the Swedish economy continues to stagnate with reduced automobile traffic as a result, the air quality requirements would be met without stricter emission standards. Regardless of what the traffic development looks like, stricter exhaust regulations would simplify traffic planning in Stockholm's inner city, analysts say. In at least two streets, Gotgatan and Stallgatan (near Grand Hotel), where tests were made, the levels of carbon dioxide and nitric oxides already today exceed the WHO's limits. Stockholm Street Commissioner Sture Palmgren (Conservative) is of the opinion that the exhaust fume problems are in the process of solving themselves in Stockholm. "In 5 years auto traffic in Stockholm has dropped 10 percent, The decrease will probably continue. The situation is not in any way critical," Palmgren says. "But of course I am in favor of improved emission controls." [Text] [Stockholm SVENSKA DAGBLADET in Swedish 1 Mar 82 p 27] 11949

CSO: 5000/2084

END

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7 May 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 350

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 350

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DEVELOPING COUNTRIES' USE OF AGRICULTURAL CHEMICALS RAISES CONCERN

Helsinki HELSINGIN SANOMAT in Finnish 4 Apr 82 p 23

[Article by Antti Vahtera: "Developing Countries Are Being Poisoned"]

> [Text] The use of insect and plant poisons is restricted in industrial nations.
> The multinational companies need new market areas.
> Now, dangerous poisons are being dumped into Third World fields.

About 25,000 people die annually in developing countries because of insecticides and other powerful pesticides. There are many times more sick people, according to one estimate a half a million.

These UN estimates are of necessity taken at random. Nevertheless, they indisputably demonstrate that the use of insecticides in the developing countries is alarmingly widespread.

The big chemical companies began to take over new market areas when the wealthy nations' own pesticide markets shrank or in part closed down after the mid-1960's.

In her work, "Silent Spring," published in 1962, Rachel Carson demonstrated the many negative effects of strong poisons on the natural environment and in the end on people. The book raised a violent storm of opinion and finally forced many industrial nations to order bans or restrictions on powerful pesticides. These constituted a harsh blow to the big chemical industry firms, the biggest of which are multinational.

Then the developing country markets came to the rescue. Their capacity to accept [these chemicals] soon proved to be almost limitless, namely these developing countries which were struggling for economic growth and industrialization at any cost. Their model was Western, particularly American efficiency and the negative side effects of industrialization were ignored.

The multinational companies could use for their own benefit imperfections and loopholes in the legislative system. For example, in the United States the law does not prohibit the manufacture and exporting of poisons whose use in the country of manufacture is banned.

Poisons Spread Like Epidemics

To find out about the extent and nature of the "neoexporting" of poisons, the editors of the American magazine NEWSDAY investigated the use of poisons for a year in several Latin- American and Asian countries. As a result of this investigation, the magazine published an extensive four-part series of articles. In it they vehemently attack the multinational firms' "sowing of poisons."

NEWSDAY primarily investigated the export and use of pesticides produced by American multinational firms. The magazine demonstrated, however, that European chemical industry multinational firms also engage in the same kind of business activity. For example, the FRG, France, England and Japan sell large amounts to the developing countries. NEWSDAY reached the conclusion that the widespread use of poisons endangers people and upsets the natural ecology in all the countries it investigated. The poisons have spread in many places like epidemics.

One area NEWSDAY investigated was the Tolima Valley in Colombia where cotton, sesame and rice are grown.

A local hospital doctor said that he had treated dozens of children who have harelips and cleft palates. Women living in the valley have had an exceptionally high incidence of miscarriages.

Low-flying planes spray insecticides in the Tolima Valley. Their chief target is the valley's cotton and rice fields. But flyers do not shut off the spray-jet nozzles when flying from one field to the next. The poison spreads in all directions — over canals where laundry and dishes are washed as well as over small dwellings, orchards and even the little hospital. When housewives hear the planes coming, they cover their wells and rush the children and livestock to shelter.

The most unprotected of all are the poor farmhands working in the fields, who are repeatedly exposed to the chemical fog spread by the planes. They are also often ordered to spray the fields themselves. Under a scorching sun, they spray poisons from cannisters attached to their backs without any protective devices. Often they are shrouded in a cloud of poison or the poison runs down their backs from the cannister.

After the spraying, the empty cannisters are washed in boiling water. This kills the bacteria, but it does not neutralize the poisons. Then the cannisters are used to collect rainwater, since they do not have many pots and pans. Farmhands often mix poisons with their bare hands and occasionally blow open clogged hoses [with their mouths].

Many of these poisons are banned in the United States and other Western countries. Despite the fact that they are so strong, manufacturers often recommend that different poisons be mixed into a "bomb," as the mixture is called in Tolima. Local merchants estimate that farmers use twice as much poison as experts recommend.

In some of the poison packages there is a brief warning in Spanish. This is, however, meaningless since the farmers cannot read. Many of the packages are not marked with the universal symbol for poisonous substances, the skull and crossbones.

So, many have become ill from these poisons. The local doctor said that over a period of 25 years he had treated 7,000 cases of poisoning in his little hospital, which serves 25,000 people.

About 30 farm workers die of poisoning annually. In 1975 there were 70 miscarriages that were probably due to these poisons in the Tolima Valley.

Price of Brazil's Economic Miracle

Colombia is, however, one of the rare developing countries that react critically to powerful pesticides. Officials recommend the "integration" of pesticides, a plan in which biological methods occupy a significant place. The use of some poisons, like 2,4,5-T and phosvel, is banned in Colombia.

In many developing countries the situation is even worse than in Colombia. One example is Brazil where the military government in the 1970's decided to start industrializing the country at any cost. Officials made it plain to foreign investors that projects dangerous to the environment were welcome. Businessmen did not have to worry about troublesome issues which environmental activists publicly raised in other developing countries.

The generals' open-handedness accelerated the phenomenon referred to as the "Brazilian economic miracle," which also has its other side: how officials react to poisons used in agriculture.

There are about 8,000 known poison brands in Brazil. According to the Brazilian Agricultural Research Institute, the use of poisons rose from 40,000 tons a year in 1970 to 160,000 in 1980. According to NEWSDAY investigators, "chemicals are used haphazardly, almost entirely without official supervision, and they cause major damage to the ecology."

In Bolivia, Comarapa's little community economy collapsed when farmers started to use insecticides in their fields at the prompting of produce marketers. Up until 1965 they had controlled insects with traditional methods, particularly crop rotation.

Three years later, an insect pest resistant to the poisons developed and the farmers' tomato harvest was ruined. Poison dealers offered chemicals that were stronger than before, but they did not help. The insects remained alive and the farmers' fields did not recover.

Similar cases are known to exist in developing countries in Africa and Asia. For example, the world's biggest homogeneous plantation, the Gezira Cotton Plantation in the Sudan, is a poison-competition arena for the multinational comapnies. Last year alone, 3.5 million liters of poison were sold for plantation use. Many workers have become ill or died and animals have died in droves.

Even the United Nations is involved in the poisoning through its Food and Agriculture Organization (FAO). With its 40-year, $2-million program, it has been trying to destroy the tsetse fly, which causes sleeping sickness, and turn the tropical African rain forests into grazing grounds for cattle. The experts as well have severely criticized the program, which was begun in 1975.

Ordinarily only sudden, dramatic cases of poisoning stemming from a fatal mistake give rise to general attention. This happened in Egypt in 1971 when phosvel killed peasants and about 1,000 water buffaloes. In 1972 about 6,500 Egyptians became ill from methyl mercury, which is used to protect grain kernels.

In 1976 in Pakistan about 2,900 people who did not know how to properly use malathion became ill. Some of them mixed it with their bare hands and six people died.

Insects Resist Poisons

The most dangerous thing about isolated cases of poisoning is, however, the sneaky effect of insecticides on the environment and humans. The poisons often persist in the environment for a decade or two. These poisons move up the food chain and finally accumulate in humans.

In the end insecticides and plant poisons have the opposite effect of what was intended. Not only do they kill insects' natural enemies; they also give rise to resistant insect strains. According to official statistics, their number has sharply increased. In 1965 only 18 resistant insect pest strains were known to exist, in 1968 they already numbered 228 and in 1977 fully 364. Included among them is also the malaria mosquito, which has once again brought the scourge of malaria to many developing countries.

The multinational companies nevertheless continue to export poisons to the developing countries without paying the slightest attention to bans and restrictions on their use in the industrial nations.

They can use different detours and loopholes in the law to their advantage.

A good example of this is the American firm of Velsicol which manufactures chemicals called phosvels. In 1976 symptoms often leading to strokes were noticed among workers at the Velsicol plant in Bayport, Texas. The local population was aroused and the company had to close the plant.

Nevertheless, Velsicol continued to sell phosvels abroad after the fuss was raised over the poisonings at the Texas plant. In 1978 it sent Costa Rica three boatloads of poisons originating in subsidiary companies in Panama and Mexico. Large quantities of phosvels were sold in Indonesia, at least last year.

From 1971 to 1976 about 6 million tons of phosvels and other banned insecticides were shipped abroad as U.S. foreign aid. This "aid," however, had to be ended because of the protests of American environmental protection organizations.

The phosvel scandal aroused so much attention abroad as well that some developing countries were also aroused. Thus Colombia banned the use of phosvel in 1977. The Philippines, which forced Velsicol to ship a load that had arrived in that country back to the United States, did the same thing.

While the importing of dangerous insecticides is opposed more than it was before in many developing countries, these countries are somewhat helpless in the face of the marketing tactics of the multinational companies. The company often manufactures banned chemicals in its home country and ships them to a plant it has itself founded in the developing country. There the pesticide is finally manufactured and then exported to other developing countries, provided with a new brand name.

The companies advertise their poison on the radio, in the newspapers and large-scale outdoors advertising in the developing countries.

Poison Exports Are Big Business

In many developing countries the companies have their own factories. As an attracter of foreign investments, Brazil once again heads the list. Shell has invested from $20 to $30 million in new plants abroad, the Dow Chemicals Company has its own plant which manufactures 2,4-D and Swiss firms are engaged in a joint project. Bayer, which is the world's biggest manufacturer of pesticides, also has its own plants in Brazil.

India, Malaysia and Indonesia also manufacture products banned in the industrial nations. For example, DDT is manufactured in India and Malaysia.

U.S. law also favors pesticide exporters. Manufacturers can export poisons if they are intended "for export only." The companies do not even have to reveal what substances the poisons contain. Unregistered pesticides can be exported without testing.

Poison exports are really big business. It is estimated that the 19 multinational companies that control developing country markets annually export at least 45 million kg of insecticides, the manufacture of which is banned in their home countries. The American firm of Union Carbide exported $645 million (about 2.9 billion marks) worth of poisons last year to Latin America alone and obtained $122 million in profits for itself.

However, representatives of the multinationals believe that the effect of the pesticides is largely positive and many of them regard themselves as friends of the developing countries. They also feel that the United States — or other industrial nations — should not force its values and regulations on them. The developing countries should themselves be allowed to decide what attitude to assume toward dangerous products.

Critics say that in the final analysis the developing country consumer is completely at the mercy of these poisons. Corrupt politicians in cooperation with unscrupulous multinational firms decide on them. They have founded a worldwide insecticide "supermarket" which by no means tries to satisfy the needs of the peoples of the developing countries. Critics charge that in part it serves the developing countries' own upper class and in part — and even more so — the consumers of the wealthy nations.

Probably over half, in Central America as much as 70 percent, of all insecticides are used in the developing countries as export varieties that find their way to European, American and Japanese consumers.

Local cultivation has disappeared in the face of the big plantations. Their owners often work in the pay of the multinational companies. The plantations have increased their harvests, but have at the same time led the whole farm economy off in an oblique direction. The so-called green revolution has also in part speeded up the process. The experimental grain varieties developed to inspire it are particularly susceptible to plant diseases and require large doses of insecticides.

The increased use of insecticides not only threatens millions of people in the developing countries, but also those consumers in wealthy countries who eat fruit or grain imported from the developing countries. Particularly in the United States, alarming amounts of poison have been found in imported foods.

In their work "Circle of Poison," David Weir and Mark Shapiro trace the cycle of poisons manufactured in the United States, sold abroad and brought back to the United States in foods. Kepone, an American-made insecticide that causes damage to the nervous system, has been found in Guatemalan bananas. American-made aldrin, which cannot be used in the United States to protect grain, has been found in coffee beans imported from Costa Rica.

Difficulties with Poison Cases in the United States

Last year U.S. officials had to put a stop to all beef imports from Mexico, El Salvador and Guatemala because of overly large traces of poison. A batch of peppers sent to American supermarkets was found to contain fully 29 times the maximum trace of poison allowed. According to the U.S. Food and Agriculture Administration, 10 percent of the foods imported into the country contain overly large traces of poison.

The U.S. Environmental Protection Agency (EPA) has too small a staff to handle poison cases. The EPA usually does not want to or cannot punish violations, nor do its occasionally imposed small fines, usually less than $5,000, shake the multinational companies much either. The EPA cannot force a manufacturer to stop production of some poison either if it is intended for use abroad.

Nowadays, President Ronald Reagan's policy also hampers EPA activity. As the new president, he immediately rescinded his predecessor, Jimmy Carter's, restrictions on exports of dangerous products. According to these, a company that intended to export a product banned in the United States had to get a special permit from the Department of Commerce.

Reagan is just roughing out his policy, but according to advance information it favors American industry more than before.

The new policy not only reverses the Carter government initiatives, but also eliminates the requirement that export countries must be warned. Greater responsibility than before for protective measures falls to the developing countries themselves.

American environmental protectionists are all stirred up over the preparations for influencing existing policy and are branding this a serious setback in the campaign against the destruction wrought by the poisons. They stress the fact that even the previous stricter requirements were quite inadequate.

The multinational companies are also concerned over the situation. Many of them are afraid "their image" may be damaged: that they will begin to be regarded as a gang of bandits who in the name of their own business profits are endangering the health of millions of people.

Despite their pangs of conscience, the companies nevertheless fight legislation that interferes with competition and restricts business profits.

Finland Returns Mainly Fruit

About 2,000 tons a year of foods imported into Finland are returned because of traces of poison. They are mainly apples, pears and citrus fruits. The amount is, however, only 1 or 2 percent of overall imports and 4 percent of inspected foods.

Last year 300 lots of bananas imported from Central America into Finland were examined in the Customs Office laboratory. Insecticides, or "hard pesticides": DDT, lindane and dieldrin, were found in only three lots. However, the amounts were clearly under the permitted level.

"Generally 50 percent of the bananas are examined," M.A. Arto Kiviranta of the Customs Office laboratory told us. The examination is chiefly concerned with a mold preventative called thiapentazole, which is not a hard pesticide. The amounts of thiapentazole traces observed have been under the maximum permitted level.

Spot checks are made of coffee beans. A few years ago an extensive examination of raw coffee was made during which nothing alarming was revealed.

At the most, 50 percent of permitted DDT levels has been found in grapes and plums imported into Finland.

11,466
CSO: 5000/2097

DEVELOPMENTS IN WEST AUSTRALIA FAVOR FOREST PRESERVATION

Industry Logging Limits

Perth THE WEST AUSTRALIAN in English 9 Mar 82 p 19

[Text]

The WA timber industry has accepted the Forests Department's multiple-use proposal for conservation in the karri forest as a blueprint for its own future in the lower South-West.

Timber production will be limited to 49.7 per cent of the total karri belt, to be cut over a 100-year period and progressively regenerated.

The remaining area has been set aside for reserves, recreation, catchment protection and scientific purposes.

The chairman of the Forest Products Association, Mr E. Sprengel, said yesterday that the industry disagreed with those who opposed the department's proposal without considering the effect that a loss of employment would have on people who lived and worked in the forests.

"We believe that the principles discussed by the department and the conclusions reached have been distorted by an obsession with the Shannon Basin and unrealistic claims that it should be preserved completely from cutting," he said.

"Forty per cent of the Shannon Basin is already preserved from cutting and this includes 60 per cent of its total virgin karri.

"The Shannon has long been a major source of timber and for more than 20 years, up to 1970, supplied the Shannon River mill, one of the biggest in the State."

Mr Sprengel said that the Shannon Basin was only part of the karri environment.

An area bigger than the Shannon and immediately east of it was already a flora, fauna and landscape priority area in which cutting was banned.

WILDERNESS

This area showed the maximum possible range of ecotypes within the karri belt. With the proposed D'Entrecasteaux Park it was a significantly better example of wilderness than the Shannon.

"The karri forest has always been subjected to pressures from those with extremist views," Mr Sprengel said.

"As recently as the 1950s the pressure came from those who wanted to see it cleared for agriculture, a concept that would have been disastrous to the whole of the South-West had it been accepted.

"Considerable inroads into forested areas have already been made."

It would be equally disastrous if the forest

was set aside for a single use, Mr Sprengel said.

Without management it would be subject to natural decline and fires would threaten adjacent communities.

The vitality of the forests was aided by industry removing waste and residues. This also improved fire protection.

The multiple-use concept supplied a balance in which production forestry played a vital part.

Timber production was the economic base that supported the other management objectives of recreation, conservation and science.

Mr Sprengel said that sawlog-production in WA's hardwood forests had been heavily reduced ed sinnce 1976. By 1987, production levels would have fallen 44 per cent in 11 years.

This reduction would provide for a continuous supply of sawlogs and allow the community to gradually adjust to the changes.

It was preferable to the preservationists's proposal to close the sawmills, he said.

Closure would mean a considerable loss of timber and other wood products and a big loss of jobs, not only in the industry but at all levels in the South-West community.

"Talk of alternative jobs in the recreation and tourist industries comes out of a dream not yet realised," Mr Sprengel said.

He said that conservation of the South-West forests was probably more important to the timber industry than to anyone else. Production in the karri forest was reaching the point where it would equal the rate at which the timber was growing.

Only a fraction of the forest would be cut in any one year and most of it would be in various stages of regrowth. This would apply only to that part of the karri belt where cutting was permitted.

In the national parks, fauna, flora, road and stream reserves the natural forest would remain, subject only to managment control.

Drop in Hardwood Cutting

Perth THE WEST AUSTRALIAN in English 11 Mar 82 p 3

[Text]

Six small timber mills may have to stop operating under a plan to reduce the hardwood sawlog cut in WA forests over the next five years.

The plan provides that by then the hardwood sawlog cut will be down by 61,000 cubic metres to 762,000 cubic metres a year.

A Forests Department working plan approved by the Government provides for this reduction to be partly offset by an increase in pine production of 44,000 cubic metres to 108,000 cubic metres a year in the same period.

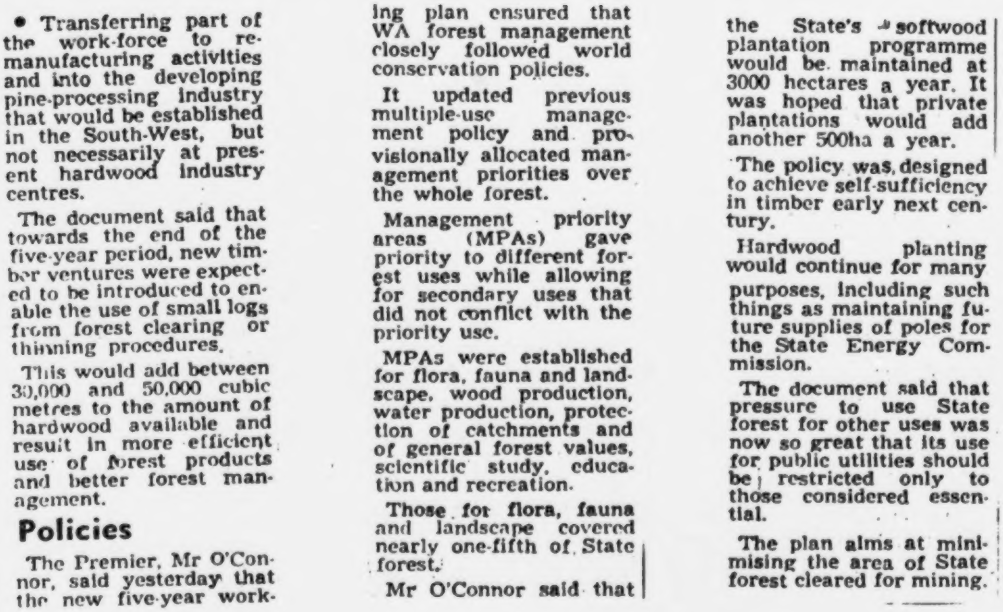
The 177-page document, released yesterday, said that the reduction in the allowable annual hardwood cut would result in six small mills ceasing operations based on general-purpose sawlogs from State forest and crown land.

The mills could continue operating on this material only if private mill log resources could be found.

The mills were not named.

Plans for continued restructuring of the industry included:

- Amalgamating sawmills into fewer units of economic size.
- Varying permit and licence conditions to provide the management flexibility needed for multiple-use forestry.



- Transferring part of the work-force to remanufacturing activities and into the developing pine-processing industry that would be established in the South-West, but not necessarily at present hardwood industry centres.

The document said that towards the end of the five-year period, new timber ventures were expected to be introduced to enable the use of small logs from forest clearing or thinning procedures.

This would add between 30,000 and 50,000 cubic metres to the amount of hardwood available and result in more efficient use of forest products and better forest management.

Policies

The Premier, Mr O'Connor, said yesterday that the new five-year working plan ensured that WA forest management closely followed world conservation policies.

It updated previous multiple-use management policy and provisionally allocated management priorities over the whole forest.

Management priority areas (MPAs) gave priority to different forest uses while allowing for secondary uses that did not conflict with the priority use.

MPAs were established for flora, fauna and landscape, wood production, water production, protection of catchments and of general forest values, scientific study, education and recreation.

Those for flora, fauna and landscape covered nearly one-fifth of State forest.

Mr O'Connor said that the State's softwood plantation programme would be maintained at 3000 hectares a year. It was hoped that private plantations would add another 500ha a year.

The policy was designed to achieve self-sufficiency in timber early next century.

Hardwood planting would continue for many purposes, including such things as maintaining future supplies of poles for the State Energy Commission.

The document said that pressure to use State forest for other uses was now so great that its use for public utilities should be restricted only to those considered essential.

The plan aims at minimising the area of State forest cleared for mining.

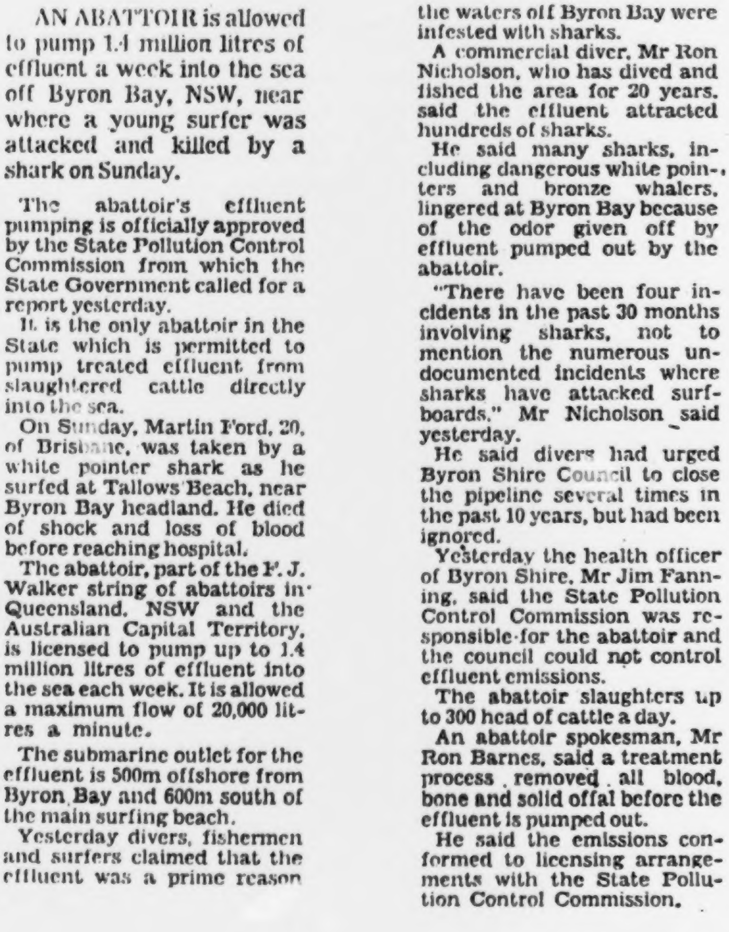
CSO: 5000/7529

ABATTOIR DUMPS WASTE INTO SEA WHERE SHARK KILLED SWIMMER

Canberra THE AUSTRALIAN in English 9 Mar 82 p 1

[Article by David Hancock]

[Text]



AN ABATTOIR is allowed to pump 1.4 million litres of effluent a week into the sea off Byron Bay, NSW, near where a young surfer was attacked and killed by a shark on Sunday.

The abattoir's effluent pumping is officially approved by the State Pollution Control Commission from which the State Government called for a report yesterday.

It is the only abattoir in the State which is permitted to pump treated effluent from slaughtered cattle directly into the sea.

On Sunday, Martin Ford, 20, of Brisbane, was taken by a white pointer shark as he surfed at Tallows Beach, near Byron Bay headland. He died of shock and loss of blood before reaching hospital.

The abattoir, part of the F. J. Walker string of abattoirs in Queensland, NSW and the Australian Capital Territory, is licensed to pump up to 1.4 million litres of effluent into the sea each week. It is allowed a maximum flow of 20,000 litres a minute.

The submarine outlet for the effluent is 500m offshore from Byron Bay and 600m south of the main surfing beach.

Yesterday divers, fishermen and surfers claimed that the effluent was a prime reason the waters off Byron Bay were infested with sharks.

A commercial diver, Mr Ron Nicholson, who has dived and fished the area for 20 years, said the effluent attracted hundreds of sharks.

He said many sharks, including dangerous white pointers and bronze whalers, lingered at Byron Bay because of the odor given off by effluent pumped out by the abattoir.

"There have been four incidents in the past 30 months involving sharks, not to mention the numerous undocumented incidents where sharks have attacked surfboards," Mr Nicholson said yesterday.

He said divers had urged Byron Shire Council to close the pipeline several times in the past 10 years, but had been ignored.

Yesterday the health officer of Byron Shire, Mr Jim Fanning, said the State Pollution Control Commission was responsible for the abattoir and the council could not control effluent emissions.

The abattoir slaughters up to 300 head of cattle a day.

An abattoir spokesman, Mr Ron Barnes, said a treatment process removed all blood, bone and solid offal before the effluent is pumped out.

He said the emissions conformed to licensing arrangements with the State Pollution Control Commission.

CSO: 5000/7529

TELECOM BANS PCP PRESERVATIVE ON TELEPHONE POLES

Melbourne THE AGE in English 9 Mar 82 p 15

[Article by Kate Legge]

[Text]

Telecom has banned the use of a toxic wood preserving chemical on telephone poles following recent reports of its cancer-causing properties.

A document prepared by the United States Environment Protection Agency claims that the chemical Penpachlorophenol, known as PCP, poses risks of cancer, birth defects and other adverse reproductive effects under certain conditions.

The ACTU's occupational health and safety unit issued a health hazard alert last week calling on unions with members who are exposed to PCP to demand the immediate suspension of its use.

The head of the unit, Mr John Mathews, said: "There are now restrictions on the use of PCP in Victoria." The alert refers to the evidence of toxilogical experiments on animals and warns that PCP must be viewed as a presumptive cancer risk in humans.

Telecom's public relations manager, Mr Brian Luscombe, said yesterday that Telecom had been monitoring overseas studies on the chemical for the past 18 months. "In the interests of safe working conditions we have told contractors to stop using PCP as a preserving agent for the cross arms on telephone poles," he said.

PCP is a widely-used wood preserving agent and wood pest control agent as well as a weed killer and slime and algae control agent used in the paper, paperboard, leather, paint and adhesive industries.

The union alert reports that PCP is known to affect humans if it is inhaled, swallowed, or absorbed through the skin. There are no controls on the maximum level of toxic contaminants contained in the chemical.

A member of the Latrobe University microbiology department, Mr Don McPhee ,said that a shortage of toxicologists working in Australia had led to inadequate controls on the industrial use of some toxic chemicals.

"In the past some chemicals manufactured overseas have not been rigorously checked before being introduced into this country. People tend to rely heavily on information from overseas."

Deaths

Mr McPhee said there has been considerable concern in Queensland since the death of workers in contact with PCP has been related to the toxic contaminants of a herbicide used by plantation workers during the 1950s.

The American EPA has proposed restrictions on the use of PCP following the release of its latest research document. It has recommended classifications for restricted use, limitations on some methods of application, and an outright ban on some uses, such as for wood intended for interior use and wood intended for uses that may result in the contamination of animals, food or water.

The union alert also stresses the danger of creosote, a chemical which is produced in Australia as an alternative wood preservative to PCP.

Reference to information supplied by the American EPA shows that "in addition to causing cancer, exposure to creosote can lead to irritation of the skin and eyes and possible sensitisation to light".

The head of the State Health Commission's industrial health department, Dr Milne said that although wood preservatives were widely used in industry, "if the hazards are known people generally use toxic chemicals carefully".

The most controversial section of the union alert criticises authorities such as the Timber Preservers' Association of Australia for failing to educate the public on hazards of using PCP and creosote.

The alert quotes from a pamphlet issued early this year by one of the TPAA's member companies. "The pamphlet makes the following statement 'For the past decade all aspects of creosote use have been scrutinised in detail by the US EPA and other relevant US Government authorities. The conclusion was that it is a safe material and its continued use is economically and strategically necesary'."

Subject to comments from ACTU affiliates, recommendations for union actions against the use of these toxic chemicals will eventually be adopted as policy by the ACTU executive.

CSO: 5000/7529

URBAN DECAY ANALYZED

Karachi DAWN in English 28 Mar 82 p 12

[Article by A. T. Chaudhri: "Where Men Decay"]

[Text] THREE out of every ten Pakistanis live in cities which are growing bulky and slummy, year after year, and do not conform to any recognisable pattern or planning strategy.

One of their common characteristics is that they are cities and slums rolled into one. They have undertones of modernity and overtones of primitiveness. They have contradictory skylines and silhouettes – ornate and ugly, exciting and drab. That adds to the miasma of joy and suffering in the urban life.

What are these 20 and odd cities, with population of 50,000 and beyond, like? To have a bird's eyeview of the urban panorama, one must begin with the highcheeked queen that is Karachi. Once the cleanest city east of Suez, its population has jumped from less than 0.5 million before Independence to over 5 million now. With its runaway expansion, this biggest metropolis boasts of its inflated workforce, gilt-edged trade and gold-rimmed industry. But the queer juxtaposition of its mini-skyscrapers against dingy hovels, posh localities and stinking suburbs, glamorous patches and old-world environs of the fishing village of "Currachi" – all this demoralises its 'denizens' leading an almost sub-human life.

This nightmarish aspect of urban living which reminds one of Goldsmith's lament over upstart towns – "where wealth accumulates and men decay" – is partly true of all cities in Pakistan. For instance, the cultural metropolis, Lahore, is part feudal, part factory-hooter. It has an oriental cast with its minarets, monuments and Mughal gardens as well as western streaks of modernity. But with its ancient walled city and new low-lying areas it presents the spectacle of a dilapidated, moth-eaten town.

Likewise, Peshawar, near the famous Khyber Pass, is part dramatic, part barbaric, part trumpet, part dirge. So are Rawalpindi, the old garrison town, Faisalabad, Multan, Hyderabad and Quetta – all living in the past and looking to the future. The one exception is the federal capital of Islamabad, which flaunts its bureaucratic arrogance and modern flourishes with its long, broad avenues, big awesome mansions and lush green wild parks. But it is a city apart – a city with all geography, no history.

Unlike the capital, most of the cities are problem-ridden. For, the urban population has shot up from 9.9 per cent, in 1950; 16.3 per cent, in 1960; 22 per cent, in 1970, to 28.2 per cent in 1981. This is owing mainly to the hectic exodus of rural multitudes into urban 'heavens' in search of new pastures. Every year two hundred thousand people cross the line. Since the population is growing, rather galloping, at the rate of 2.98 per cent – one of the highest birth rates in the world – the cities have to feed new mouths ad nauseam. No wonder, their socio-economic problems become more and more acute.

These multiple problems stem indirectly from the deepening rural crisis – displacement of labour by mechanisation, transfer of capital from the villages to the cities by absentee landlords and shrinking of economic opportunities for landless labour. Then, the gulf between rural and urban life is widening, due to the absence of basic amenities – education, health, communications and agriculture-based projects – in the countryside. Hence the ceaseless trek to the old and new towns which are bursting at the seams.

So intense is the pressure on urban life that men are packed like sardines in the suburban fringes of towns. Some 40 per cent of the new towns do not have clean drinking water. Barely 34 per cent of their populace has access to piped sewerage and disposal facilities. The housing situation is bleak. According to the Fifth Plan benchmark estimates, there is a backlog of two million housing units. The urban dwellers need 90,000 units a year, but less than 35,000 are put up. Of these 70 per cent have hardly two rooms and five to seven persons are squeezed into them. Only 20 per cent houses have proper bath-rooms. What is worse, the spiralling prices of land, brick and mortar, cement and iron make house-building an elusive dream for the low-income groups who get much less out of life than they put into it to subsist at the poverty line.

The urban environment adversely affects the indigent citizens and rural migrants. Though Pakistan's density of population is 105 persons a square kilometre - it is lower than that of other Asian countries – the congestion and overcrowding in cities ruin many lives. Unhygienic conditions also breed epidemics. Again anonymity and strains of urban life make sub-calibre folk drift into the underworld of crime and vice. The bright lights, amusements, novelties, bargains, thrills and excitements lead some people astray so accidents, robberies, rapes, murders and other crimes add to the seamy side of urban living. In fact, there is more crime per capita in Pakistan's cities, more mental disorders, more social unrest, more political ferment and more cultural topsy-turvydom.

What is the way out of the disturbing inventory of urban maladjustments? First, the migration from villages has to be drastically reduced, by spreading a network of small and cottage industries and launching labour-intensive projects in the rural sectors. Secondly, absentee landlords have to be screened and the tillers of soil turned into peasant proprietors. Introduction of cooperatives and provision of basic amenities – more schools and dispensaries, more water and power, and better communicatons and market facilities – should help lower the barriers between rural and urban life and stem the tide of migration.

More important, cities have to be given a face-lift by vigorous slum-clearing, and streamlining of sewerage, water supply, health services and transportation. There is also a clamant need for changes in the urban planning strategy. Elected municipal bodies have to be set up, free from bureaucratic meddling. These must be allowed to raise adequate funds to tone up civic life. If sensible town-planning schemes are devised, if a ban is imposed on the vertical expansion of cities and construction of luxury houses and if scarce resources are put to an effective use under a National Housing Policy things would begin to look up.

Time is also ripe for a National Environment Policy, for no nation can neglect its environment without sabotaging its own future. Pakistan is the oldest cradle of well-planned cities, as the ruins of Moenjodaro bear out. It can still make its cities the nurseries of urban virtues.

CSO: 5000/5727

CONCERN OVER WATER CONTAMINATION IN KARACHI

Karachi DAWN in English 20 Apr 82 p 9

[Text]

WATER-BORNE diseases are among the greatest health hazards in the country – throughout the developing world as a matter of fact – but one sometimes wonders whether villagers, who are supposedly more threatened, are really not better off than the citizens of Karachi. KMC occasionally carries out laboratory testing of water samples and, invariably, the results are alarming enough for water to be regarded with the greatest suspicion. The results of the latest survey have just been released by KMC. Out of 535 water samples collected by KMC, laboratory tests showed that 239 were contaminated and unfit for human consumption. This works out to 44 per cent. An earlier survey had found that out of 443 samples 186 were contaminated, or about 42 per cent of the total. While official agencies glibly recommend that water should be boiled before consumption, this is easier said than done. In the first place is the fact that the majority of the population cannot really afford to boil water. Besides this, even those who do boil drinking water cannot escape contamination in other ways, or on occasions where boiled water is not available, such as when travelling or eating out. It should be pointed out that coincidental with KMC's report about water contamination are reports that hepatitis, one important source of which is water, has increased in a dramatic way in the city. It hardly needs to be mentioned that serious epidemics, the primary cause of which is contaminated water, are common in Karachi.

No really satisfactory answer has been given by KDA or any other agency to why water should be contaminated to such an extent. Investigation by competent and impartial experts is needed to determine whether this is caused by improper purification and filtration, in which case methods should be revised. One theory is that water is contaminated in the transmission system, such as when drains or sewers are in close proximity to water pipelines and, because of defects in the latter, manage to seep in. If this is so, then there is need to change or repair pipelines – after all Karachiites pay heavy taxes and, besides, the economic cost of illness to the Government and the people is far more than what changing or repairing pipelines would cost. Another point at which water could be contaminated is in the overhead or underground storage tanks in houses, or in pipelines in houses. This is, in most cases, an individual problem, but even then if a scientific survey is undertaken and the results released, the public will be made aware as to how serious the problem is. If, for instance, it is found that in half the cases water is contaminated within a house, and not during transmission, then people will sit up and take notice, and try to put into effect preventive measures. Another dimension of the same problem concerns public places: hotels and restaurants, educational institutions, mosques, even public offices and libraries, and manufactures such as ice. These should also be required by law to maintain their water storage facilities in hygienic condition. There is a law regarding food – which is largely ignored even by the so-called posh eating places and hotels – and occasional inspection is carried out by health inspectors. It is doubtful, though, whether this inspection extends to physical examination of water storage tanks and laboratory testing of water samples. This is unfortunate, since in many cases, because our food is cooked to such an extent as to eliminate the possibility of contamination, the drinking water is likely to be more hazardous than food. The case for a law regarding public places other than eating houses is self-evident and requires no explanation.

CSO: 5000/5731

BRIEFS

WATER SAMPLES FOUND CONTAMINATED--KMC Health Department collected 443 water samples from different parts of the city during March out of which 186 were found contaminated. A spokesman of Health Department said the Water Management Board had been requested to examine the pipelines which may have been leaking causing contamination and to take steps to remove the faults. The spokesman denied reports of gastro-entritis but admitted "a few cases of dehyderation and loose motions among some children." [Text] [Karachi DAWN in English 7 Apr 82 p 14]

CSO: 5000/5727

ADOPTION OF ENVIRONMENTAL PROTECTION LAWS URGED

Hanoi LUAT HOC in Vietnamese No 4, Oct-Dec 81 pp 25-28, 44

/Article by Tran Trong Huu: "The Scientific and Technological Revolution and the Problem of Writing Laws To Protect the Natural Environment in Our Country"/

/Text/ 1. In the work of building socialism and defending the fatherland, science and technology play an extremely important role. The party and state have always asserted: of the three revolutions, the scientific-technological revolution is the key revolution. Recently, the Political Bureau resolution on the science and technology policy again asserted: "In our country today, science and technology are an extremely strong force accelerating socialist construction and the defense of the fatherland, thereby making a tremendous contribution to our winning victory over poverty and backwardness and advancing socialism to total victory in our country."

In recent years, under the leadership of the party and state, the scientific and technological revolution in our country has recorded noteworthy achievements. The vigorous application of scientific and technological advances in production, everyday life and the defense of the nation has yielded tremendous benefits for developing the economy, raising the standard of living and defending the fatherland. The new advances in industry, agriculture, forestry, communications-transportation, national defense and so forth have been closely linked to the scientific and technological advances brought about by the scientific-technological revolution. For example, in agriculture, as a result of the active application of scientific and technological achievements over the past 10 years, we have recorded significant results and brought about changes and leaps forward in crop and livestock yields and output. As a result of applying scientific-technological advances, we have acquired large capabilities and favorable conditions for thoroughly developing, on an increasingly large scale, our arable land, forests, water resources, mines and so forth, which are rich natural resources that are extremely important in socialist construction in our country, a country that is advancing from small-scale production to large-scale socialist production without experiencing the stage of capitalist development.

However, it is clear that, besides the tremendous benefits that have resulted, the application of scientific and technological advances at an increasingly rapid rate is having increasingly harmful effects upon production and upon the health and life of man on an increasingly large scale. These harmful effects are most evident in the fact that our strong and profound impact upon nature has gradually disrupted the ecological balance between man and nature, and this balance cannot be restored by nature itself. Here, the normal relationships between man and nature in which man is a part of nature have been disrupted.

Today, we all know that the increasing use of chemical fertilizers, growth regulating hormones, herbicides, insecticides and pesticides, in addition to raising crop yields, also have harmful effects, such as causing the soil to become dry and caked, polluting the soil and killing more than a few non-harmful creatures. The present serious destruction of forests in our country (1) has been and is causing tremendous harm and incalculable consequences in many areas. In the process of socialist industrialization, thousands of industrial enterprises of all types have been constructed and gone into production. The solid and liquid wastes generated by these enterprises each day will, if not treated, pollute the air and water sources and cause more than a small amount of harm to production and the life of the people. As a result of applying science and technology, the ability to mine and quickly process large quantities of minerals has raised many problems that must be resolved regarding the treatment of solid wastes, air pollution and water pollution.(2) Other forms of pollution, such as noise pollution, radiation, radioactivity and so forth, are also causing more than a small amount of harm that has not been detected or fully calculated by us. The burning of forests, indiscriminate hunting and so forth have caused an increasing decline in the number of birds and wild animals and some species face the threat of becoming extinct or are already extinct.(3) The destruction of the natural environment in our country by the weapons of the U.S. imperialists (chemical weapons, radioactive weapons, biological weapons and so forth) continues to be a serious aftereffect of the war.(4)

The situation presented above faces us with a pressing problem that must be resolved: together with exploiting nature, we must preserve and restore sources of natural resources and protect the surrounding natural environment for the sake of the interests not only of today's generation, but of future generations as well.

Under the conditions of rapidly applying scientific and technological advances on an increasingly large-scale as is the case today, the relationship between society and nature has undergone truly large changes. Whereas, in the past, man only knew how to exploit and take from nature everything of benefit to himself and returned nothing to nature whatsoever, today, the problem we face is that man must, besides exploiting nature, also preserve and restore nature, help nature to overcome the harm caused by man, harm that nature itself cannot overcome.

Of course, only in our socialist society, only with our socialist state can this task of an epochal nature be carried out in the best possible manner. Because, in contrast to socialist society, in our society the contradiction between the need to rapidly develop production forces and the need to protect nature, protect the environment is not a contradiction of an antagonistic nature. Our state not only has all the bases and conditions needed to make decisions designed to exploit and utilize each natural resource--which are the constituent components of the surrounding natural environment--in the most reasonable manner, but also fully plans and implements the measures needed to stop and correct the harm caused by the application of scientific and technological advances in the course of utilizing the natural environment upon the production, life and health of the people. Our party and state have always correctly defined and established the relationship between using nature and protecting nature, between man and nature in the course of the development of society for the sake of our interests and happiness today and the interests and happiness of our progeny.

This is concretely and vividly evident in the fact that, today, especially under the conditions of the scientific-technological revolution, protecting nature (using, preserving and restoring nature) has become one of the important functions of our socialist state.

To fulfill this function, our state employs one of its very effective tools, the law. By means of laws, with their different forms and degrees of regulation, our state regulates the exploitation, use and protection of nature with a view toward supporting the development of the economy, culture and national defense and improving the living conditions of the people. This regulation by means of law is most evident in the fact that the state has established strict regulations governing the methods and principles involved in the exploitation and use of nature and the business practices that involve the reciprocal relationships between man and nature and the surrounding natural environment and insures the implementation of these regulations by means of its state power.

Articles 19, 20 and 36 as well as other articles of our country's Constitution (1980) laid the most important and basic legal foundation for regulation by means of law of the protection of this surrounding natural environment. In particular, Article 36 of the Constitution states: "All state agencies, enterprises, cooperatives, units of the people's armed forces and citizens have the obligation of implementing the policy on protecting, transforming and restoring sources of natural resources and protecting and improving the environment."

2. Using and protecting nature (the surrounding natural environment)--which are two organically linked forms of activity of man--are truly problems of life itself, problems that arise objectively, problems which mankind must face and resolve in the course of his development. We cannot ignore or refuse to resolve these problems because their cause lies immediately within and is closely linked to the process of our impact upon nature, to the development of social production forces, to the application of scientific and technological advances and the perfection of production technologies, to the growth of the population, etc. And, the purposes of this effort to protect nature are to maintain and insure the reasonable use of natural resources, to provide man with the best possible environment in which to live by insuring ecological unity and balance between man and nature.

For this reason, protecting nature (the surrounding natural environment) is a matter of routine necessity in each and every case in which man has an impact upon nature for the sake of his own interests. Under the conditions of the scientific-technological revolution, this objective necessity has become even more urgent. Of course, in every stage of the revolution and period in the history of the development of our socialist society, the tasks and the specifics involved in protecting nature are defined differently by our party and state.

Our state's laws in the field of protecting nature have, until now, been primarily directed toward those natural entities of most important significance, such as the land, water, forests, mines, etc. Numerous legal documents have been promulgated regarding these entities of nature. It can be said that these are some of the most important laws in effect. Article 19 of the new Constitution stipulates that the state (all the people) exercises absolute ownership of natural resources--the factors of the environment--such as arable land, forests and mountains, rivers and lakes, mines, resources within the earth, in the ocean waters and on the continental shelf, etc. Article 20 of the Constitution defines the most important principles underlying the use, management and improvement of the soil. Council of Ministers' resolution number 125-CP dated 28 June 1971 on strengthening the management of cropland, Council of Ministers' decision dated 1 July 1980 on unifying the management of cropland and strengthening the management of cropland throughout the country, Premier's directive number 15/TTg dated 11 February 1964 on combating erosion, retaining soil, retaining fertility, retaining water and so forth have played a large role in exploiting, using and protecting arable land to support the development of the economy and everyday life in the recent past. As regards the exploitation and protection of forests and forest resources, there are such laws as the law on the protection of the forests dated 6 September 1972, Council of Ministers' resolution number 183-CP dated 25 September 1976 on afforestation, decree number 221-CP dated 29 December 1961 on preventing and fighting forest fires, Provisional Revolutionary Council of Ministers' circular number 24-TT/75 dated 20 September 1975 on protecting and restoring the forests, Council of Ministers' decree number 101-CP dated 21 May 1973 on people's forest inspections, etc . The exploitation and protection of plant and animal life, especially rare plant and animal life, are regulated in such documents as Premier's directive number 134-TTg dated 21 June 1960 on prohibiting the shooting of elephants, Council of Ministers' decree number 39-CP dated 5 April 1963 which promulgated the provisional statutes on hunting and trapping forest birds and animals, Premier's decision number 41-TTg which defines areas in which hunting is prohibited, etc. In the fields of the management and use of water, mines and so forth, our state has also promulgated a number of legal documents.

The provisions of the laws mentioned above and other laws that have been promulgated lay a very important, initial foundation for laws governing the use, preservation, transformation and restoration of sources of natural resources and the protection of the environment (that is, laws protecting nature or laws protecting the surrounding natural environment). Generally speaking, these laws have had a positive impact upon the reasonable use, transformation, restoration and conservation of arable land, forests, mines, water and so forth, which are the very important factors, the very important constituent elements of nature, of the natural environment. Recently, the law has begun to give attention to the struggle to stop, limit and eliminate pollution, such as pollution of the land, water pollution and air pollution, and protect rare animals and plants.

However, from an overall point of view and, in particular, in view of the new requirements, we see that our country's laws on protecting nature (the surrounding environment) still has many shortcomings.

At present, we do not have a unified viewpoint concerning protecting nature. For this reason, our present laws on the protection of nature do not form a system and, in many cases, are even contradictory. To date, we only have a few legal documents regulating the use of certain natural entities (primarily the land, forests and so forth) as objects of labor, objects of business; we do not have one general legal document concerning the matters related to protecting nature (the surrounding environment).

Another shortcoming is that all of our legal documents on protecting nature are below the level of laws (the majority of them being decisions, circulars, directives, etc.).

Finally, if viewed from the perspective of protecting nature (the surrounding environment) under the conditions of the present scientific and technological revolution, we see that there are either no regulations or inadequate regulations in more than a few fields. For example, there are no regulations or inadequate regulations regarding protecting ecological systems, restoring natural resources or restoring the ecological systems that were destroyed by the war (especially as a result of the chemical poisons sprayed by the United States and the haphazard exploitation of natural resources); matters regarding land, water and air pollution; the protection of animals and plants, especially rare species; the organization of the effort to manage the protection of nature; matters regarding legal responsibility for violations of the laws on the protection of nature, etc.

3. In the present stage of building socialism and protecting the socialist fatherland, using and preserving nature and protecting the environment have become an important and pressing task. In a speech at the 4th Congress of the Party, Vo Nguyen Giap asserted: "Today, as we enter the stage of accelerating the industrialization of the country, this issue must become one of our foremost concerns because the life of our entire nation for many centuries to come will be affected by what we do today..."

Therefore, improving the laws on protecting nature in order to help perform the task of protecting nature and the environment in the best possible manner is a pressing demand. The question we face is: how can our present laws on protecting nature be strengthened and perfected?

To begin with, we maintain that protecting nature (the surrounding natural environment) includes measures for protecting the individual components of nature as well as measures concerning the use, transformation and restoration of these components. Our state must clearly define these measures. They should include: protecting arable land, water, the bowels of the earth and the animal and plant worlds; using these entities of nature in a reasonable, scientifically based manner; keeping the air and water pure and unpolluted; insuring the restoration of natural resources, the environment, etc.

State management of the effort to protect nature is the most vivid manifestation of organizing the performance of this function. Article 8 of the law on the organization of the Council of Ministers states: the Council of Ministers has the responsibility of "deciding policies, regulations and measures that orient the efforts of the various sectors and levels toward exploiting and using each potential of the country in a reasonable manner" and "implements policies on protecting, transforming and restoring natural resources and protecting and improving the envoronment."

Because the law is the tool used by the state to fulfill its functions and tasks, to organize and manage society and, as a result, to competently support the management of the state, the law must be perfected and strengthened on the basis of the specifics and requirements of management. Therefore, to implement and insure the implementation of the tasks faced in the state's management of the effort to protect nature, laws on the protection of nature must be written in the form of a system and be constantly improved, must become a sector of law on the protection of nature (the surrounding natural environment) within our country's system of socialist law.

In order to perform this task, it is necessary to resolve two organically related problems: drafting general laws on the protection of nature and drafting specific laws on the protection of nature.

Nature (the surrounding environment) consists of the entire material world outside and surrounding the society of man. In actuality, however, the matter of protecting nature is not related to all the components of nature, but only to those components of nature upon which the life of man is dependent, components whose condition is dependent upon the behavior (method of exploitation) of man. Each component of nature (natural entity) toward which regulatory efforts are directed has its own special characteristics; therefore, attention must be given to these characteristics when amending the law. These components can be divided into four types: types that must be protected (animals); types that must be preserved and nourished in the process of their use (soil); types that are totally destroyed in the process of their exploitation (mines); and types that must be protected from pollution and becoming unusable (water). Therefore, as regards the use and protection of each of these entities of nature, it is necessary to have separate laws, have a separate legal system suited to the characteristics of each. In other words, in order to regulate the protection of nature (the social relationships arising in the use, transformation, restoration and protection of the entities of nature) in a reasonable and effective manner, it is necessary to have separate laws, such as laws on the use and protection of arable land, forests, water and mines, laws on the protection of the air, on the use and protection of the animal world, etc.

On the other hand, it must be realized that these entities of nature regulated by separate laws, although they have different characteristics, are organically related to one another, are the components of a unified system and are inseparable. For this reason, laws on the protection of the individual entities of nature must be established as components of a more general, broader system, the system of laws on the protection of nature, in general. The best would be a code of law: the law on the protection of the surrounding natural environment. This code of law would define the most basic principles and resolve the most general problems in the use and protection of nature.

The law on the protection of nature and all of the separate laws on the protection of nature, once established on the basis of the systems viewpoint presented above, will create a system of law on the protection of nature, create a unified legal sector within our country dealing with the protection of nature. This would also be the first step in strengthening the system of socialist law in the field of protecting the natural environment in our country at this time.

FOOTNOTES

1. In 1945, our country had 9 million hectares of rich and average forests; in 1979, it had only 2.5 million hectares; Pham Van Dot, NHAN DAN Newspaper, 28 November 1980.

2. For example, according to investigative data compiled by the Hanoi Epidemiological Hygiene Institute, from 1969 to 1971, there were approximately 50 types of pollutants, 10 of which were frequently encountered and exceeded permissible limits. They included lead, benzene and carbon monoxide pollutants, the concentration of which was high at a number of production installations, dust and SO_2 (as of 1980, at only a number of its main centers, the energy sector was generating about 600,000 tons of dust and other pollutants/ Dao Ngoc Phong, "Environmental Pollution"; Science and Technology Publishing House, 1979/).

3. See: Hoang Dien: "The Forest Birds and Animals--Economic Resources"; Truong Kha: "Te Giac: S.O.S.," QUAN DOI NHAN DAN Newspaper, 19 September 1981.

4. Dao Ngoc Phong: "Environmental Pollution," p 116, also see: NHAN DAN Newspaper, 25 November 1981.

7809
CSO: 5000/5716

ENVIRONMENTAL DETERIORATION AFFECTING CLIMATE

Santiago EL MERCURIO in Spanish 28 Mar 82 p C1

[Text] The climate in several municipalities in Greater Santiago, especially the temperatures and the rainfall pattern, has been changing since 1945 as a result of pollution, the best index of which is the presence of a large dirty cloud in the sky.

This was established in the study "Deterioration of the Environment in the Municipalities of Greater Santiago," done by researchers at the University of Santiago, which was presented by Prof Sergio Bravo Fuentes at the Geography and History Congress being held at the Diego Portales building.

Professor Bravo indicated that at the present time they are planning a study and evaluation of the tendencies and changes of the atmospheric variables: air temperatures, relative humidity, atmospheric pressure, wind (both speed and direction), solar radiation, precipitation, and cloudiness.

He said that measurement and study of those variables will make it possible to confirm the gradual and systematic deterioration of the environment and the change in the natural microclimate of Greater Santiago: Quinta Normal, Las Condes, and the Cerrillos-San Bernardo sector.

The deterioration can be noted in the decreased visibility of the horizon, the increasing turbidity of the air, caused by the action of the polluting gases, and the variation in rainfall, Professor Bravo Fuentes explained.

Results Obtained

In the studies of Quinta Normal (1979), relevant environmental deterioration was noted, a condition which has been occurring since about 1945. "The presence of a dirty cloud is the best index," the researcher stressed.

Out of the total rainfall observed (1968-1979), 604.3 mm more occurred in Quinta Normal than in Pudahuel. In the same period, 1481 mm more was recorded in Las Condes than in Quinta Normal, and 1951.5 mm more than in Pudahuel.

The rates obtained, which make it possible to confirm an increase in precipitation from the valley to the Andes foothills, may be because of the "block" brought about by the abrupt terrain of the cordillera of the central Andes, which results in greater sunshine, brightness, dispersion of the pollutants, and the breaking up of the thermal inversion layer.

Temperature Increases

In measurements made at the Los Cerrillos observatory, it was determined that a discernible increase in temperature has been occurring since 1977, between 1.2 degrees Centigrade and 1.1 degrees Centigrade during the period 1976 and 1997 [sic].

These changes may have their origin in increased pollution, greater density of the dirty cloud, reduction of the natural soil area, industrialization, population increase, and increased numbers of cars, according to the professor.

In addition, in the El Bosque district, a temperature increase of 0.0-1.1 degrees Centigrade was noted during the same period.

8587
CSO: 5000/2094

MARINE POLLUTION THREATENS DAILY LIFE

Cairo AL-SIYASI in Arabic No 842 28 Mar 82 p 2

[Article: "Marine Pollution: A New Danger Threatens Our Lives"]

[Text] Environmental pollution has now become one of the most serious problems facing the world because of the enormous industrial progress which controls all areas of life. Recently, however, a new type of pollution has appeared which affects aquatic life. It is known as "marine pollution."

Egypt possesses one of the largest aquatic environments, since it overlooks the Red Sea and the Mediterranean Sea, in addition to the Nile River. The question is: Is there a marine pollution problem in Egypt? What steps should we take to eliminate this pollution?

Dr Ahmad al-Rifa'i Bayyumi (Director of the Marine Sciences Institute in the Academy of Scientific Research) says that we must now start paying attention to the great danger which threatens us as a result of pollution of every aspect of Egypt's environment since all of these are interconnected. The Nile River flows into the Mediterranean, for example. Moreover, the Egyptian aquatic environment is surrounded by a belt of cities, desert and agricultural land, factories, and other concomitants of life. This belt which surrounds the environment is often the cause of pollution.

Pollution With Insecticides

Agricultural insecticides are often a cause of pollution of the aquatic environment, especially through irrigation and drainage, since the fields send the excess water into the drainage canals. These drainage canals converge to pour out into lakes and then into the sea. The effect of agricultural insecticides is gradually transferred until it finally reaches the sea. This has serious effects on living beings.

Pollution Through Waste Materials

Similarly--and as is well known--all industries produce waste materials, but Egypt does not yet have a system for making use of these residues rather than throwing them into the aquatic environment, either into the Nile River or into the sea. There are several countries in Europe which use the wastes of these industries after treating them by multi-phased scientific methods.

There is another type of waste which is knows as human waste. Egyptians generally throw their human waste into the water. By way of example, Cairo deposits its waste materials into the Bahr al-Baqar drainage canal which in turn flows into al-Manzalah Lake. It then goes on to the Mediterranean Sea. This goes on despite the fact that Europe uses scientific sedimentation processes on the waste materials so that they can be used as organic fertilizer in agriculture. Moreover, Egypt is facing the problem of solid waste in the form of junked vehicles, truck chassis parts, and so forth.

Oil Pollution

In addition, oil pollution has become one of the most serious types of pollution. This comes as a result of oil exploration and discovery operations as well as from production, extraction and transportation via pipeline or by super-tankers. Oil tankers in Egypt have had adverse effects in polluting the waters of the Red and Mediterranean Seas and other bodies of waters. These tankers also leave dangerous wastes themselves in the Red Sea. The government must be alert to enact legislation which will put a stop to this type of pollution.

How Shall We Treat Pollution?

The director of the Marine Sciences Institute believes that the beginning of the process of eliminating pollution lies in the spread of a consciousness among the Egyptian public to familiarize them with cleansing processes which must be put into general use. Moreover, the government must provide the public with the means of eliminating wastes in a scientific manner.

As for marine pollution, the state must immediately enact laws to prevent this pollution so that the problem does not get to the point where we cannot do anything about it at all. This in turn would affect our lives and our health.

6945
CSO: 5000/5014

ISRAEL

HYDROELECTRIC PLANT PLANNED NORTH OF LAKE TIBERIAS

Tel Aviv HA'ARETZ in Hebrew 5 Mar 82 p 17

[Article by 'Eli 'El'ad: "More Electricity--Less Jordan"]

[Text] The elctric company's program for the establishment of a hydroelectric station north of Lake Tiberias, by deflecting most of the water flow from the natural channel of the Jordan at Gesher Bnot Yaaqov, moving it by canal to the 'Almagor ridge and having it drop from there in order to exploit the difference in altitude to generate electricity--by allowing a residual flow in the natural channel--places in danger of extinction the last portion in which the Jordan produces fresh water flow.

The hydroelectric station program north of Lake Tiberias was already brought up more than 5 years ago, and since then, largely through inertia, has been treated lazily and with very many hesitations. Of late, the National Council for Planning and Construction decided to give the green light to the electric company to start the detailed planning phase for the station. This decision means the granting of conditional authorization for the program and the creation of a situation in which it will become more difficult in the future for the national council, which is the country's highest planning authority, to retreat. This, both because an explicit plan involves additional expense and because the question would then be asked, why didn't the national council scrap the program--as, apparently, it should have done.

The idea of using waters of the Jordan north of Lake Tiberias to generate electricity was considered in the early fifties, in the framework of the National Water Carrier which was based on deflecting the waters of the Jordan by Gesher Bnot Yaaqov. The idea was not implemented then because of political reasons. The current program, intended to exploit the difference in altitude of about 250m between the height of the water flow in the natural channel of the Jordan adjacent to Gesher Bnot Yaaqov and the level of Lake Tiberias, is based on a canal of about 11 km in length to be built according to a plan prepared in 1958 for the National Water Carrier canal. The intent is to make use of a part of the plan prepared then which is still worthwhile now, in the device to deflect the water to the canal, which was built then in the vicinity of Gesher Bnot Yaaqov.

Apart from the processing areas of Moshav Almagor, the electric company is preparing to build a large control pool for the collection of about 1.6 million cubic meters of water. From the pool, the collected water is to fall, through a pressurized pipe that will be dug into the ground and that will have a diameter of about 4m and a length of 1.2km to the power station which will be built alongside the Jordan channel and at a distance of about 2km from its discharge. This station will include two 50 megawatt turbines that will be dug into the ground so that only their tops will stick out above the surface. The initial design of the Almagor plant spoke of dropping the waters of the Jordan to a station that would be situated on the edge of Lake Tiberias. The present plan does not harm the shore of the lake.

A Winter Station

The hydroelectric station plan north of Lake Tiberias is conditional mainly upon the weather. In rainy years and in seasons in which the Jordan's flow is high--in the winter and spring--it would operate during the hours of peak electrical demand at full power of 100 megawatts. The intent is to exploit the station mainly outside the low hours of electrical consumption, which are mainly the nighttime hours, during which time the water would be collected in the control pool near the entrance to the pressurized pipe. The water would fall through the pipe from a height of about 50m above sea level to about 200m below sea level. As a yearly average, the station would generate, according to the electric company's statistics, about 30 megawatts of electricity a day.

The maximum transport capactiy of the deflecting canal is 30 cubic m of water per second (about 30 mcm--million cubic meters--per month), and therefore, according to the statistics, the proportion of water available to the amount expected (according to multi-year averages) at the deflecting point, would yield a surplus of water (88mcm permonth) during February and March, while the low months would be July (9 mcm), August and September. Thus the final expectation, based on these data, is that during six months of the year the deflecting canal would operate at less than half of its full capacity. It should be noted that in 30 percent of all years, there is no flow at all in the northern channel of the Jordan during July, and the statistics are based on a multi-year average.

One of the qualitative points in the debate--apart from opposition in principle to implementaiton of the project--is the quantity of residual water that will continue to flow in the natural channel of the Jordan. The electric company talks about 5mcm per year as the minimum required for the channel, while, for example, the nature preserve service argues for a minimum of 5mcm [the quantity is somewhat unclear since the abbreviation standard established by the author for million cubic meters is not followed here and in the previous citation two or three lines above] in the hot months of the year and a larger amount, according to a table that it worked up, in the other months.

The official in charge of hydroelectric projects at the electric company, Dr Dan Wiener, says: "the goal is not to dry up all flora in the Jordan channel north of Lake Tiberias. The company intends to operate the station while strictly preventing any harm in the natural channel of the Jordan and maintaining the existence of plant life along the channel. The station, Dr Wiener continues, "is the first economic step towards significant fuel saving based on Israeli sources of energy. Its advantage is that it will supply clean energy which can be collected and exploited during peak hours of consumption." Dr Wiener notes that the investment in setting up the station is estimated at about $105 million, and the company estimates that within 8 years that investment will be amortized, while the operation of the station, which does not consume fuel, will save about $15 million per year.

"Death for the Jordan"

The society for the preservation of nature, along with the nature preserve authority are adamantly opposed to the electric company's program for setting up the hydroelectric station. In a discussion at the national council, the chairman of the society for the preservation of nature, Mr 'Azaria 'Alon, said that "the project should be cancelled, and it should not be allowed to reach any level of real discussion. This plant is of minor importance from the point of view of its output, but its damage is sure. It is the pet project of someone in the electric company. The problem is not the quantity of water that will reach Lake Tiberias and its quality, but how precious it is to this entire region--the whole narrow valley between the edges of the Galilee and the edges of the Golan and the Jordan which flows through it. It means destruction of the environment--and then either the plant will exist only marginally, or water will flow through the Jordan and the plant will suffer large losses, or both will happen together: the Jordan will have insufficient water and the plant will suffer large losses. When it becomes clear that the plant is not necessary, all that will be left will be the destruction of the environment."

The deputy director of the nature preserve authority, Mr Dan Perry, says that the preserve authority opposes the establishment of the plant because it will be impossible to simultaneously maintain the economic viability of the plant and the Jordan as a living river. The establishment of the hydroelectric station means that in certain seasons of the year, especially in the spring and fall when the current flow decreases, not to speak about the summer, the plant would be a calamity for the Jordan. Given Israeli reality, it is clear that the economic project is what will win out, says Mr Perry. We are afraid, he says, that when a white elephant situation is created, the economic consideration will be decisive, which is why the nature preserve authority opposes the creation of a conflict of interests. The victory of the economic project will bring about the death of the Jordan.

The deputy director of the nature preserve authority continues: the people of Israel must remember that we are dealing with the last section of the Jordan that still remains in its natural state. North of Gesher Bnot Ya'aqov, where formerly the sources of the Jordan gathered in order to create the large current flow of the river, they excavated and led the Jordan current into canals. South of Lake Tiberias they have turned the Jordan into a stinking sewer channel. The only part that remains as the Jordan is this section, from which they now want to deflect the major portion of the current. The most important thing of all is the value of the Jordan as the Jordan, and the last section has to be left as is.

The claim that the station is important for the generation of electricity in the peak hours is weakened by the consideration that the hydroelectric station is set to be principally a winter and early spring station. It will be possible to use it to supply part of the peak winter demand, but it would not supply the peak summer demands which are no less than those of winter. Furthermore: The positioning of the station at the end of the country's electrical distribution system, close to the pumping system of the national water carrier, was, apparently, intended to increase its indispensability. But precisely in the peak hours of the hydroelectric station's activity, in the winter, the indispensability of water pumping from Lake Tiberias is relatively slight, while during the period in which the carrier is in massive operation, in the summer months, the expected contribution will be next to nothing.

Another matter: toward the end of the eighties when the completion of the 'Almagor station is expected, if it should be approved (the electric company estimates the time frame at about 5 years from the date of approval)--the in place capacity of power stations in Israel will reach 4,500-5,000 megawatts. The 'Almagor station is set to generate an annual average of about 30 megawatts--which means only a fraction of 1 percent.

With all the talk about the importance of monetary and fuel saving (in foreign currency) that will be achieved by the establishment of the 'Almagor station, it is of equal importance that we guarantee for ourselves and coming generations a decent quality of life. The Jordan has always been center stage in the thinking of Zionist philosophers and dreamers of the return to Israel. Many of the songs of yearning for Israel were written about the Jordan, which we have managed in the course of one generation to turn into a historical anachronism. The program for the deflection of the waters of the Jordan threatens its last living section.

Beyond that, we should demand of the electric company that before it tries to implement such a controversial project--that it set its own financial house in order. The electric company's administration and board of directors and the heads of the energy office might be asked about "free energy." We do not refer to those electric company workers whose electricity consumption does not exceed the family average in Israel, but to those who consume two and three times as much and more. Were the management of the electric company (which wants to save fuel at the expense of the Jordan and the entire nation of Israel) to impose a fine on all those kwh which are consumed above the Israeli family average far higher than the cost of those kwh to the consumer, there is no doubt that the amount of electricity consumed freely would decline. Thus there would be a not inconsequential saving, and in hard cash. Additional examples could be provided as to how money could be saved within the electric company itself--before asking the people of Israel to agree to the deflection of the major portion of flow of the last living section of the Jordan.

9794
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BRIEFS

DROUGHT CAUSES SHORTAGES--Drought was mainly to blame for shortages this year of dry beans, cotton, lucerne seed, dairy products, wheat and oil seeds, the Minister of Agriculture and Fisheries, Mr Pietie du Plessis said yesterday. In a written reply to a question by Mr Horace van Rensburg (PFP Bryanston), he said other reasons for shortages were reduced cultivation and unfavourable climatic conditions, and aphid plague, and an exceptionally poor 1980/81 wheat crop. Asked what the price implications were, Mr Du Plessis said dry beans would cost more. The price of cotton was linked directly to the world price which was relatively low due to the recession in Western countries. The selling price of locally produced lucerne seed was increased by about 22 percent in March. It was not possible to forecast price implications of possible shortages of dairy products. Wheat prices were in force for a full season and imported wheat would be sold at the same price as local wheat. The anticipated shortage of oil seeds would probably not have a market influence on domestic price levels. [Text] [Johannesburg THE CITIZEN in English 16 Apr 82 p 4]

CSO: 5000/5726

ENVIRONMENTAL GROUPS OPPOSE RHINE-MAIN-DANUBE CANAL

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 22 Mar 82 p 5

[Article: "'The Biggest Nature-Destroying Activity Can Still Be Prevented.' Rally of Opponents of the Rhine-Main-Danube Canal/A Proposal: Use It as a Regatta Course"]

[Text] Regensburg, 21 March--Eighteen organizations have teamed up to form a "Nationwide Action Group Against the Rhine-Main-Danube Canal," which held its first "mass rally" in Regensburg. A speaker for the action group admitted that this pact, in which the main participants have been nature and environmental protection associations and two railroad workers' unions, came about rather late. According to information from the Bavarian Economics Ministry--to which, however, no one at Regensburg wanted to refer--37 kilometers of the 99-kilometer-long canal between Nuernberg and Kelheim are ready and 7 kilometers are under construction. Partly faced with a fait accompli, the action group nevertheless believes that there is still an opportunity to prevent "the biggest nature-destroying activity in this country." To date it has collected 235,000 signatures throughout the FRG, and it hopes that the end of the year the figure will be 1 million. However, not even 100 persons came to the announced "mass rally" at the Leerer Beutel [Empty Purse] Inn; this verged on the symbolic because the rented hall made almost as empty an impression as the cash register of the FRG.

All the arguments against completion of the canal were assembled. It was repeatedly explained that the canal would not pay for itself, that quite apart from the very high construction costs, current operating costs were expected to be higher than receipts. Prey, chairman of the Nuernberg Personnel Council of the Federal Railroads, prophesied a "penetration by Eastern Bloc countries through dumping at low prices." Kammer, advisory member of the "Society for Efficient Transportation Policy," predicted an "irruption by the Soviet Danube fleet into the Rhine area," which in the long run could not be prevented even with treaties. The speaker wondered why Prime Minister Strauss, of all people, is a "protagonist of the canal, which is useful only to the Eastern Bloc countries." Weinzierl, chairman of the Nature Protection Association, could not understand the Bavarian prime minister either: Even if the latter has no liking for nature, he is "a good economic expert" and should be against the canal for purely economic reasons.

Sothmann, chairman of the Bavarian Land Association for the Protection of Birds, referred to the area so far only partly destroyed by construction of the canal as a "rest and wintering area almost unique in Bavaria." Certain birds which fly from northern Scandinavia to Africa stay here for a while. Irreplaceable biotopes would be destroyed forever if the groundwater were cut off by a concrete wall from the waters of the Altmuehl and the Danube: when the numerous wet meadows dried up, then the dead arms of the river would disappear.

Kuegel, leader of the citizens' initative called "Save the Altmuehl Valley," was the only one who dared attempt a reply to the obvious question of what should be done with the part of the canal which had already been built. In a few key words he outlined what is to be done after construction is stopped: "Regatta courses--the sluices remain as a reminder of the insanity of the enterprise--otherwise fill it up and green it over." To the Bavarian government's argument that both it and the Federal Government had obligated themselves contractually to carry out the construction, several speakers countered by referring to two escape clauses relating to the ability to finance and the agreement of the parliaments concerned.

5586
CSO: 5000/2088

NONPOLLUTING PROCESS FOR LEAD PRODUCTION DEVELOPED

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 22 Mar 82 p 16

[Article: "Lead Production Need Not Be Deleterious to the Environment. A New Process Has Been Introduced by Berzelius in Duisburg/Economical of Energy and Raw Materials"]

[Text] Berzelius Metallhuettengesellschaft mbH [Berzelius Nonferrous Metals Smelting Company- Ltd], Duisburg--A completely new process for the production of lead which is economical of raw materials and environmentally benign has been introduced in Duisburg. It can fundamentally change the extraction of lead from primary ores in the future. The new large-scale demonstration plant was built by the Berzelius Nonferrous Metals Smelting Company following the so-called QSL process invented by the scientists Queneau and Schuhmann and developed by Lurgi. The Federal Research Ministry bears DM 21 million of the unusually high costs--totaling about DM 45 million--and 12 million each have been shouldered by the mother firms of Berzelius, Metallgesellschaft AG [Nonferrous Metals Company, Inc.] in Frankfurt and Preussag AG in Hanover. Both firms produce lead from primary ores--the Nonferrous Metals Company in Stolberg, Preussag in Nordenham.

For centuries, primary lead was extracted by a process which, although continually further improved, had always remained a two-step process. In fact, the ore usually had to be roasted first to remove the sulfur. The new process makes possible fully continuous smelting of the lead ores in a closed system in which oxidation and reduction of the ores occur in one process step. This process not only avoids emissions of lead and sulfur dioxide to a large extent but also saves on energy and raw materials. The clearly reduced fuel demand can also be met by means of inexpensive coal dust. Moreover, the high efficiency of the process permits use of lead ores of lower value. Thus, environmental protection and economic efficiency are not opposed to each other when new environmentally benign technologies are developed and introduced into commercial practice, according to Erwin Stahl, parliamentary state secretary in the Federal Research Ministry, who spoke at the introduction of the new process in Duisburg.

If this demonstration plant should prove out, German primary lead production could soon be switched over to this new process. According to information from Dr Hans Rudolf Wuethrich, member of the board of the Nonferrous Metals

Company who is responsible for the firm's smelters, 200,000 metric tons of lead are produced in the FRG from primary ores at this time.

The world's entire primary lead production at this time is about 3.2 million metric tons, of which almost 1 million metric tons are produced by the Eastern Bloc. In the Western world there are now 20 smelters in operation. In addition, about 1.8 million metric tons of lead are produced from secondary materials and 0.2 million metric ton of lead is produced from mixed ores in the Western world. The recovery rate of 80 percent for lead is particularly high [in comparison with other metals].

All of the world's lead producers are supposed to have been in Duisburg already, according to Wuethrich. The new process will, however, be offered only after successful completion of the large-scale test. Agreements on an exchange of experience are already in existence at this time, however. A second modern process has been developed in the Soviet Union. This so-called "Kivzet" process is also being investigated at this time by a number of international firms.

5586
CSO: 5000/2088

GOVERNMENT TRYING TO PROTECT VULNERABLE SVALBARD ECOLOGY

Oslo A-MAGASINET (Supplement to AFTENPOSTEN) in Norwegian 17 Apr 82 pp 6-10

[Article by Georg Parmann: "Vulnerable Nature in One of the World's Last Wildernesses"]

[Text] We went along with Asbjørn Børset, consultant on environmental protection, across the tundra in the Bjørndal, some kilometers south of Longyear City. It is one of the richest areas in flora in Svalbard. Even so, the vegetation is sparse. The highest plants only manage to rise a few centimeters above the surface of the hill. But the array of blossoms is striking. Svalbard poppies and reindeer flowers grow in small clusters, interspersed with a number of species of saxifrage and arctic buttercups. A little flock of Svalbard reindeer are grazing quietly by the mouth of a glacial stream. Flocks of little auks lift themselves on their wings up into the precipitous mountain slopes.

We were on the way to look at a wheel track. Børset discovered it some years ago. A tractor had made it in connection with the search for oil in the area.

"Why is a wheel track on the tundra interesting?"

"Well, it can say more than a great many words about how special the environmental protection problems are in the area around 80° north latitude; in the worst case a wheel track remains as an everlasting reminder or may even change the character of the landscape entirely," Børset says.

Permafrost is one of the phenomena that create a vulnerable nature. It is an eternal frost down to several hundred meters deep. Every summer the topmost layer thaws, perhaps to a depth of 40 or 50 centimeter. It is here that life processes take place. But if the stratum that is thin in the summer is exposed to external forces, it may begin to slide on the substratum that is frozen hard.

The extreme conditions for plant growth and life processes generally in the earth's crust are also of importance to the protection of nature on Svalbard. The summer is short and hectic. The temperature seldom rises more than a few degrees above zero centigrade, but on the other hand the sun shines all round the clock during the 3 months of summer. The extreme conditions make the vegetation especially vulnerable. It is not to be taken for granted that one can sow in an area that has plant cover and get something to grow. Where the vegetation has once been removed, it may take 10 years before it comes back again naturally--if it comes back at all, says our local expert.

We finally arrived at the rut. Even Bøget, who is now in his second year as environmental protection consultant in Svalbard, was surprised at the sight that met our eyes. What a few years before had looked like an innocent rut across the tundra had changed in some places to ravines meters deep.

The surface water had found its way to the rut after a rain. The tracks were cut deeper. Next time it rained more water found its way to that course. The process appeared to have gone faster and faster, and soon the water had cut its way all the way down to the permafrost. Loose masses and plant cover were carried along with each new shower of rain. The open sore will probably never heal with nature's own help. A new landscape has been created by what at first might look like an innocent tractor track.

Against this background it is perhaps easier to understand some of the other environmental protection problems in Svalbard, such, for example, as that 500 or 600 tourists in the 62,000 km^2 archipelago may represent a threat to nature, or that the garbage and pollution from the population of 3,000 to 4,000 may be a problem.

The authorities in Svalbard are afraid of an increased number of tourists in the island group. Today there are three types of tourists that come to Svalbard. There are cruise tourists, who come either on big cruise ships or by the Hurtigrute [steamships plying the Norwegian coast; fast boats with few calls]. As a rule the passengers are on shore only a few hours at one or two places in Svalbard, and do not represent any great problem in connection with nature protection. Another group consists of those who come as visitors to settlers in Longyear City and the other communities in Svalbard. The lodging facilities are so poor, however, that this type of traffic is minimal at present. The third type of tourists are those who come in groups of varying size to live in tents in Svalbard for varying lengths of time.

In 1981 only something more than 500 tourists came in the last-mentioned way. But they are better and better equipped, so that for one thing they have greater possibilities of moving about than before. Rubber boats, canoes, and even seaplanes are brought to Svalbard by tourists who want to experience the Arctic. Most of them pitch their tents at "camp sites" that are temporarily rigged up close to the airport in Longyear City and take one-day trips from that starting point. Some also take tents and equipment with them into the interior, to the lonelier areas in the archipelago.

The authorities in Svalbard are cautious about saying that this form of tourism is an environmental protection problem, but do not conceal the fact that it can quickly become one. In addition to the wear and tear on the vulnerable nature, it is primarily the problem of garbage and trash that can become noticeable.

"Because of the climatic conditions garbage is not broken down in the same way as we are accustomed to on the continent. Trash can remain lying there for years as a disfiguring calling card in nature, or may perhaps become a direct danger to animal life," Børset explains.

"There are no ordinary provisioning facilities for tourists in Svalbard. That means that all food and other supplies must be brought in with them from the continent. With our modern packaging of foodstuffs there is inevitably a lot of trash left over, and the tourists are not very careful to put it in a safe place or carry it back to the continent."

But it is not only the tourists, of course, that litter Svalbard with trash. The local population does that to a certain extent, too, perhaps chiefly in connection with mining or other economic activity.

In Longyear City and around the various mining areas there is still a great deal of junk and trash. There may be rails and wooden superstructures from abandoned mines that will now slowly but surely be destroyed by the ravages of time. In some cases there may be a question here whether it is an environmental protection task or a cultural mission to clean up.

"There has been a lot of discussion about what we shall do with the architectural relics of the old mine entrances. When I suggested the possibility of getting them broken up into 'scrap' and burning that, I got many adverse reactions. Many think it is proper to let the ravages of time and nature itself take care of the mining area. In spite of everything there is a great deal of history preserved here," says Ingvald Ohm, director of the Great Norwegian Spitsbergen Coal Company.

[Question] But then is it not a task for the company to restore the old mining area?

[Answer] That would be an almost hopeless and insuperable task both practically and economically, so that the question, unfortunately, hardly arises.

[Question] What is the company doing to clear away the junk and trash?

[Answer] For the last 3 years we have been carrying out a systematic cleanup program, and we will continue with that. It is costing us between 200,000 and 400,000 kroner a year, but we realize that we have not yet done enough. In the case of new installations, by the way, we are paying far more attention to the environmental protection side, and we do not abandon a mine now without a proper cleanup being done.

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The motorized traffic in Svalbard can also be a threat to nature. The automobile stock of a few hundred cars--none privately owned--does not represent any problem. There are not many kilometers of road in Svalbard, either. Environmental protection consultant Børset does not wish to say that the snow scooter traffic is a serious problem, either.

"When the Svalbard population uses that means of transport, the ground is frozen and covered with snow. The plant cover is thus not damaged. Animal life is also scanty at that time of the year, and hardly suffers especially because of the snow scooters.

"All the same, it cannot be entirely unproblematical for the scanty animal life when hundreds of snow scooters are running over the open country in the polar night. But without the snow scooters, everyday life for the inhabitants of Longyear City would be completely altered, and more restrictions on this form of outdoor life would hardly be popular," Børset says.

The new mopeds with small wheels may turn out to be a new problem. They have a lot in common with small cross-country motorcycles, and can operate away from the developed roads. That is prohibited, but some do let themselves be tempted and ride over the tundra on their little two-wheelers. And if there is anything the tundra in Svalbard cannot stand, it is cross-country riding. But so far there are only a few dozen of these vehicles here. On the other hand, their popularity is rapidly increasing.

The authorities have long been aware of how vulnerable the Svalbard environment is, and hence also of the need for special protective regulations. For 50 years there has been discussion of various forms of conservation measures for the archipelago. It was not until 1973 that national parks were established, and now more than half the area of the archipelago is a protected area in the meaning of the environmental protection act.

The three national parks are: South Spitsbergen National Park, Foreland National Park, and Northwest Spitsbergen National Park. These cover the south, west, and north ends of western Spitsbergen respectively. Toward the east there are also two large nature reservations, where restrictions on traffic and other activity are still stricter than in the national parks. They are the Southeast Svalbard Nature Reservation and the Northeast Svalbard Nature Reservation.

Besides these five big protected areas, fifteen bird preserves and two big plant protection areas have been established. Altogether, the protected areas of Svalbard amount to more than 30,000 km^2, or over half of the land area. A considerable part of the protected area, however, is covered by perpetual ice.

The polar regions have long since been conquered, so that nobody should be tempted any longer to, e.g., Svalbard for a pioneering effort and heroism. The challenge offered by Svalbard is of a different nature. Large parts of the archipelago are today a part of one of the world's last remaining wildernesses. Man is now on the point of invading it.

If Norway, as administrator of that wilderness, is to succeed in maintaining the valuable natural qualities and the delicate ecological balance in the area, it will take a considerable investment and effort for environmental protection for years to come.

Storting Report on Environmental Protection in the Arctic

It is the Ministry of Environmental Affairs that has the highest responsibility for protection of nature, protection of civilization, map-making, combatting polution, and hunting and fishing in Svalbard--along with the responsibility for polar exploration. The ministry is now working on a report to the Storting that will cover these matters in the polar regions and is aiming at completion by the summer vacation. This will form a new basis for discussions on environmental protection policy in Svalbard. But even now clear objectives can be set for that work:

"Fortunately, there is broad agreement that the natural conditions in the Arctic demand special protective measures. Both nationally and internationally Norway has assumed responsibility for maintaining and furthering a viable natural environment in Svalbard, partly through the Svalbard treaty," says Erik Lykke, department head in the Ministry of Environmental Affairs.

"Decisions on development and economic activity must therefore be based on solid knowledge of the conditions and considerations that must be taken into account on the basis of the natural conditions. We should gather a 'storehouse' of such knowledge. Today the data base is spread over many agencies and in some respects is too poor.

"We will be constantly faced with a divergence between protection considerations and economic activity. It will be to the advantage of all parties for us to have a readily accessible and as solid as possible basis in knowledge for the decisions that must be reached, partly so that individual cases can be quickly decided. These are problems that will be discussed in the new report to the Storting," says Lykke.

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28 May 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 354

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

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[Article by Mgr Roman Janusiewicz of the Regional Geodetic-Cartographic Enterprise, Wroclaw, and Mgr Bogdan Terekoczy of the University of Wroclaw Geography Institute: "Selected Elements of Urban Environmental Hazards--a Case Study of Wroclaw"]

[Text] Summary. This article presents the state of Wroclaw's urban environment, analyzing its most significant pollutants and hazards. The article also attempts to classify the environment with regard to the concentration of harmful phenomena and evaluates the degree of pollution and danger.

Being a polyfunctional city, Wroclaw lends itself to reflection and analyses in the area of environmental science problems. The greatest threat to an urban environment occurs in the areas of air pollution, pollution of surface water and noise pollution, primarily transportation noise.

The aim of this article is to present the spatial and cartographic aspects of these phenomena based on measurements taken by the VSSE [Voivodship Health and Epidemiological Station] and the OBiKS [Center for Research and Control of the Environment] in Wroclaw. (MATERIALY OBiKS, 1976; MATERIALY VSSE, 1976).

Air Pollution

The degree of air pollution is one of the main factors deciding the so-called comfort of urban living. An avalancial increase in damage, linked with air pollution, occurs after established values of standards of concentrations of dusts and gases are exceeded, and by the long lasting effects of concentrations of pollutants caused by climatic-meteorological conditions.

Wroclaw's location on the wet terrains of the ancient floodwaters of the mid-Oder River and its tributaries shaped an unfavorable microclimate characterized by high humidity, low wind velocities and relatively large amounts of calm that consequently favor the occurrence and accumulation of pollutants. The layout of the streets has a significant effect on the city's unfavorable microclimate; they represent local paths for circulating street winds and at the same time intensify the saturation of the city with pollutants from about 700 industrial establishments.

As a result of the diagnoses conducted by the OBiKS, it has been established that the emissions from 121 of the city's industrial establishments, among which 36 are characterized as being especially heavy emitters, have a significant effect on air purity. The total amount of dust pollutants emitted in 1975 from enterprises known to be especially heavy emitters amounted to 20,242 t/yr (18,572 t of boiler plant dusts and 1,679 t of industrial dusts). In turn, the total amount of emitted gaseous pollutants amounted to 17,891 t/yr (14,889 t of sulfur dioxide and 3,002 t of other gases). (MATERIALY OBiKS, 1976).

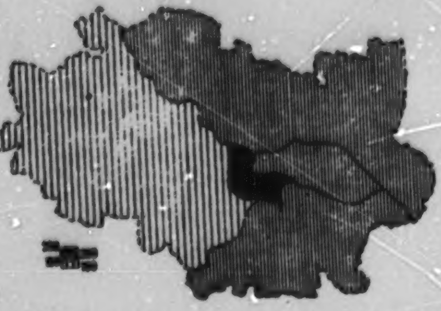

Figure 1. Mean values of dust fallout in residential districts in 1976 in t/km^2/yr

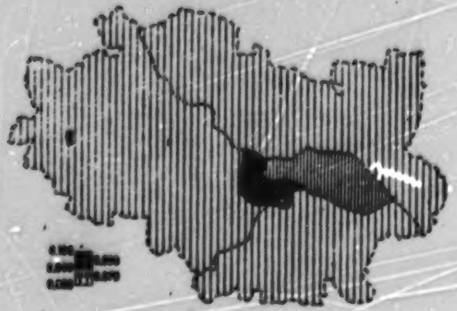

Figure 2. Mean daily values of dust concentrations in residential districts in 1976 in mg/m^2

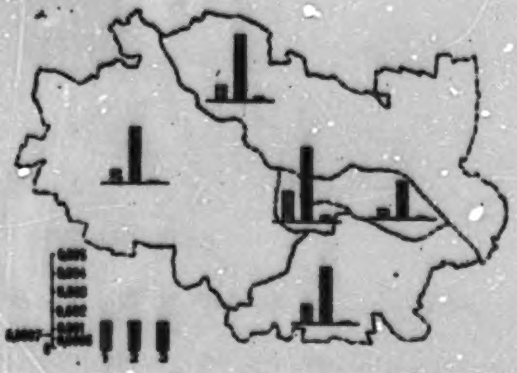

Figure 3. Mean daily concentrations of metals in residential districts in 1976 in mg/m2

Key:

1. lead
2. zinc
3. copper

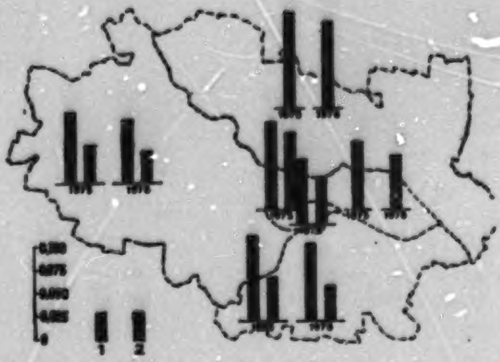
0.100
0.075
0.050
0.025
0
1
2
1975
1976

Figure 4. Mean daily values of SO_2 concentrations in residential districts in the 1975-1976 period in mg/m2

Key:

1. insulating method
2. aspirating method

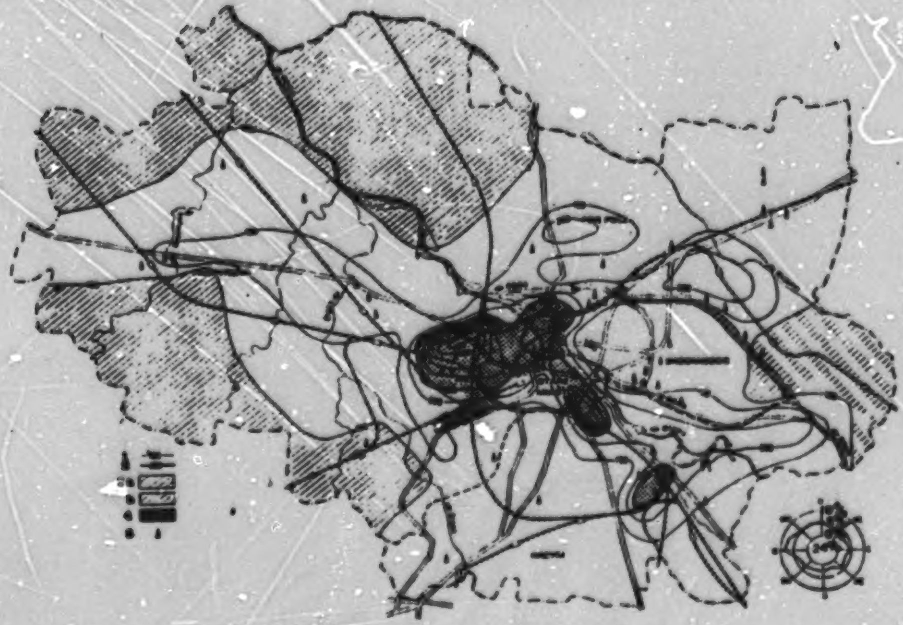

Figure 5. Map of air pollution, 1975 data.

Key:

1. dustfall in t/km^2/yr
2. permissible dustfall for protected areas
3. clean air zones:
   a. unthreatened
   b. threatened
4. polluted air areas
5. Plants and boiler rooms emitting SO_2 above 30t/km^2/yr

The spatial distribution of dust fallout in the Wroclaw region is unfavorable because the greatest dustiness occurs in the central residential districts which have a high population density (figure 5).

The fallout is especially intensive in the Stare Miastro district and the communities of Gadow Maly, Tarnogaj, Huby and around the area of the main railway depot. The dust fallout in these regions amounts to 250-450 t/km^2/yr. The communities of Ligota, Kowale, Grabiszyn, Ksiaze Male and Popowice, where the dust fallout is 200-250 t/km^2/yr, are also potentially threatened. The large number of sulfur dioxide emitters (emitting more than 30t/yr) in these regions intensifies the unfavorable situation. In the remaining communities dust fallout is within the limits of permissible norms.

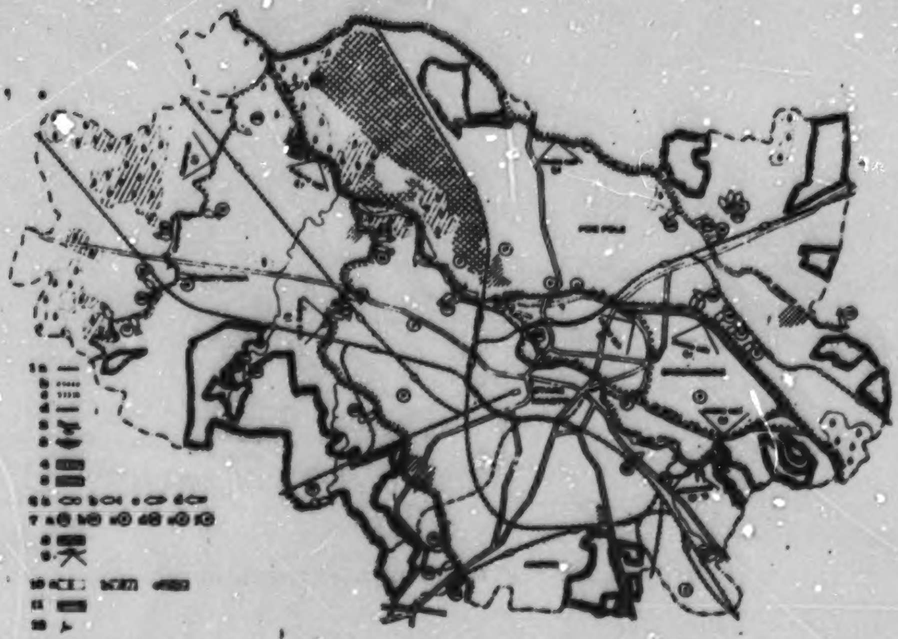

Figure 6. Map of water pollution, damaged vegetation and protected soils, 1976/1977 data.

Key:

1. Purity classes of surface waters:
   a. class I
   b. class II
   c. class III
   d. class IV
2. Purity classes of water in the periods preceeding and following the sugar-beet processing period
3. Purity classes of water during the sugar-beet processing period
4. Subsurface waters polluted by infiltration of sewage
5. Subsurface water zones polluted by municipal wastes, cemetaries and municipal dumps
6. Kinds of sewage:
   a. residential
   b. industrial
   c. municipal
   d. sanitary
7. Kinds of sewage treatment plants:
   a. mechanical-biological
   b. mechanical
   c. biological
   d. mechanical-chemical
   e. chemical
   f. sewage intermediate pumping stations.
8. Protective areas for water intakes
9. Microbiological contamination of surface waters, permanently strong--coli test 0.1, moderate or periodical--coli test 0.1-10

Figure 6 key (continued):

10. Forests:
    a. unthreatened
    b. threatened
    c. damaged
11. Legally protected class 1-4b soils
12. Storm drain outlets

There is a correlation between emitter heights and regions having especially large dust fallouts. The maximum value of dust fallout in the Gadow Maly, Szczepin and Popowice districts and around the main railway depot is the result of the many low emitters in these areas. This thesis is verified by the fact that electric power and heat generating plants which emit the greatest amount of dust do not intensify dustiness because of the great height of their emitters.

The communities of Oporow, Muchobor Wielki, Strachowice, Ratyn, Zlotniki, Pracze Ordzanskiw, Redzin and Widawa in the city's southwestern area are especially fortunate with respect to dust fallout (less than 100t/km^2/yr). The eastern areas of the city, including the communities of Wojnow and Swojczyce, also are subject to a fallout of less than 100t/km^2/yr, but a potential threat exists here as a result of the pollutants brought into the area from the city's central area via the prevailing westerly winds.

Water Pollution

The inaccessibility of subsurface waters and their unfavorable hydrogeological system to a great extent mandate the use of surface water to satisfy municipal needs. However, those very streams that serve as sewage reservoirs also serve as water supply sources; this represents a basic problem for proper water management. The city's water is polluted by industrial, residential and sanitary sewage as well as surface run-offs from agricultural and built-up areas (figure 6).

Wroclaw lies in the hydrological region which encompasses the Oder River and four of its largest tributaries: the Olawa, Sleza, Bystrzyca and Widawa Rivers. Most of these streams are already polluted as they flow into the city. The situation is especially unfavorable during the sugar-beet processing period (table 1).

Table 1. The percentage share of purity class of the rivers within the limits of Wroclaw voivodship during the 1975 sugar-beet processing period and inter-period (according to MATERIALY OBiKS, 1976).

	Purity class in percent							
	Sugar-beet processing inter-period				Sugar-beet processing period			
River	I	II	III	IV	I	II	III	IV
Oder River	—	5	80	15	—	20	60	20
Olawa	—	85	5	10	—	75	15	10
Sleza	—	40	50	10	—	3	57	40
Bystrzyca	—	40	60	—	—	—	—	100
Widawa	30	70	—	—	40	40	—	20

By the time it reaches Wroclaw's administrative boundaries, the Oder River carcarries a significant amount of pollutants, mainly from the Upper Silesia area and from the river's upper regions. Within the city's limits, the river's purity is class IV which, in effect, hinders its use in any way. Industrial, residential and sanitary sewage is dumped into it.

The class II purity Olawa River is the main source of drinking water for Wroclaw's inhabitants, but its quality evokes serious reservations, especially during the sugar-beet processing period. During the sugar-beet processing inter-period the permissible standards are exceeded fewer times and are caused primarily by the insufficiently treated industrial sewage that is dumped into the river and the effects of applying chemicals in agriculture.

During the sugar-beet processing inter-period the Sleza River is class II purity, and during the fall-winter period it is class IV. This is the result mainly of industrial (the Klecina sugar mill), residential and urban sewage discharge (MATERIALY OBiKS, 1976).

For its entire length within Wroclaw's limits, the Bystrzyca is class IV purity because of its large content of industrial and urban sewage.

During the sugar-beet processing inter-period, the Widawa River is class II purity as a result of urban and sanitary type pollutants. During the sugar-beet processing period, its waters, starting at the point of sewage discharge from the Soltysowice sugar mill, are class IV.

Wroclaw's municipal sewage is mechanically-biologically treated in sewage treatment plants and is also treated in irrigation fields. This permits a large amount of fodder to be harvested from the meadows of the irrigation fields. However, it poses a potential threat to subsurface waters because of the possibility of highly polluted sewage infiltration. Municipal dumps and cemetaries also are a potential threat to subsurface waters. These areas can be sources of subsurface pollution because of the deep infiltration of harmful substances dissolved in the water. The pollution of subsurface water is more harmful than the pollution of surface water because the self-treatment of subsurface water takes a very long time.

A significant improvement in the purity of Wroclaw's water can be expected after the Odra collector is built, a top-priority municipal investment into which the city's entire sewage network will be connected in the future and whose output will be fed to a central sewage treatment plant (the so-called recycling of water).

Threatening and Destroying Vegetation

In urban areas green zones perform specific functions: they are neutral regions for mitigating the harmful effects of air pollution (a dust-absorbing role) and noise (an acoustic role). Properly shaped greenery also influences a city's climate by humidifying the air, alleviating high temperatures, modifying winds and the like. The role of greenery as a producer of oxygen and a place reserved for the rest and recreation of a city's inhabitants are also emphasized.

Wroclaw's urban greenery encompasses wooded areas, parks, squares, residential greenery, allotment gardens, cemetaries and the like. The relatively high index of greenery per resident is not conclusive for establishing the actual needs in this area because of the uneven distribution of greenery. In the city's existing spatial system, a number of regions are practically without large groups of tall greenery, the most important type from the viewpoint of diminishing the threat. The number of green areas is diminishing constantly because of residential construction, communal and road projects and the like.

The effect of motorization on the city's greenery and the growing movement for rest and recreation in outlying wooded areas are additional reasons why vegetation is being destroyed. However, the proximity of municipal dumps to green areas represents the relatively greatest threat (figure 6). The significant toxicity of these dumps devastates and destroys nearby vegetation.

Transportation Noise

To a great extent, the growth of urban transportation, private as well as public, has disturbed the equilibrium of the urban environment. In addition to the increasingly positive results of this growth, there are also its negative effects, especially noise and the problem of air pollution by exhaust gases. The simultaneous overlapping of these negative effects is especially dangerous.

As a result of Wroclaw's dynamic reconstruction during the post-war years which was based on the old transportation system, the city's faulty spatial-functional structure was preserved. The situation in the city center is especially unfavorable, where the greatest amount of traffic occurs brought about by the mixture of communal, industrial, residential and recreational-cultural functions and the like.

Measurements of transportation noise in Wroclaw were conducted fragmentarily and unsystematically. The results contained herein concern three basic types of transportation noise from the viewpoint of noxiousness: road, railway and aircraft. The evaluation of the intensity of road noise occurring in Wroclaw is based on measurements taken during the 1974-1975 period (average[5] and quasi-maximum[6] noise levels, table 2).

Table 2. Road noise (L_{gr} and L_{qm}) during the 1974-1975 period (according to MATERIALY VSSE, 1976)

Classes of noise level in decibels (Amper)		Number of measuring points for a given class	
L_{gr} A	L_{qm} B	A	B
Up to 55	Up to 60	2	2
56-65	61-70	4	4
66-75	71-80	5	3
76-85	81-90	2	4
Total value		13	13

The average intensity level of road noise in the city is $L_{gr} = 65.7$ db(A), whic which is on the borderline of being bearable and aggravating, and $L_{qm} = 72.8$ db(A) which is aggravating (table 3) (ZASADY i PARAMETRY ...., 1975).

Tram noise at turns, crossings and bridges is a significant contributor to Wroclaw's street noise. This noise is especially noxious on Treatralny and Grunwaldzki Squares; at the Uniwersytecki, Piaskowy, Mlynski, Warszawski and Pokoju Bridges; and on Traugutt Street (figure 7). "Chimney" dispersion of noise occurs in the Stare Miastro area, partly in the limits of the old buildings of the city center (Pulawski and Traugutt Streets) and in the Olbinie area because of the narrow streets, the poor condition of the pavements and the high buildings. As if it were not enough that the intense street noise in this area is not muted, it also is reflected from building walls--at the upper stories of houses--and then focused as noise of even greater intensity, even up to 9 db(A) (Ostaszewicz, 1977).

Table 3. The effect of noise on man's organism (obtained from various sources)

	db(A)	
Noise having a harmful effect on man's organism	Greater than 85	
Noise harmful to health when exerted constantly	80	
	75	Unbearable noise
	70	Aggravating noise
Noise inducing fatigue in the nervous system, making sleep and rest difficult	65	
	60	Bearable noise
	55	
	50	
	45	Moderate noise
	40	
	35	
Noise that is harmless to health	Less than 30	

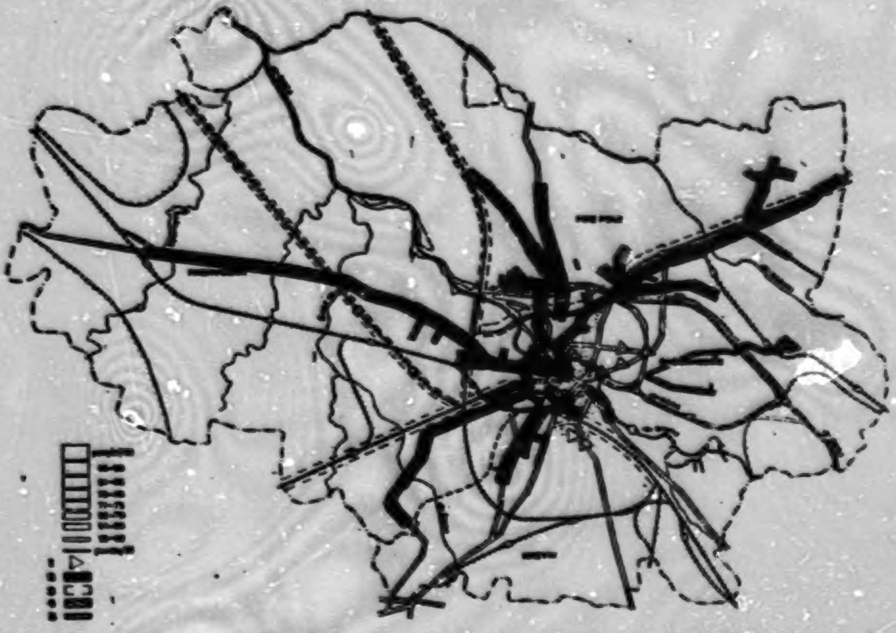

Figure 7. Map of distribution of transportation noise in db(A); data for the 1976-1977 period

Key:

1. Areas of intense tran noise
2. Car noise, L_{qm}
3. Railway noise, L_{sr}
4. Area with "chimney" distribution of noise
5. Quiet areas

The effect of railway noise is also very extensive. Wroclaw is one of the best developed railway junctions in Poland with heavy passenger and freight train traffic. In addition the railway tracks run through the central district, mainly on embankments, which increases the scope of this noise significantly. Based on measurements taken in 1976 along the railway lines near which homes are located, it has been ascertained that the average levels of intensity are $L_{sr\ (min)}$ = 70.8 db(A), $L_{sr(max)}$ = 82.1 db(A) and $L_{sr(sr)}$ = 76.4 db(A) which are acknowledged to be unbearable (table 4).

Table 4. Railway noise in 1976 (according to MATERIALY OBiKS, 1976)

Noise level in db(A)	Number of measured points in a given class		
	L_{min}	L_{gr}	L_{max}
Up to 55	—	—	—
56-65	5	2	1
66-75	17	13	6
76-80	6	13	21
Total	28	28	28

The areas near the airport, which is located in Wroclaw's southwestern suburbs in the community of Strachowice, are the prime regions for aircraft noise. Measurement results are presented in terms of average values of noise intensity for the entire series of measurements in specific localities. The average background noise level is L_{sr} = 42.3 db(A) and stationary noise is L_{eq} = 61.3 db(A) which is considered to be bearable noise (table 5).

The noxiousness of aircraft noise will be subject to a resurvey if the airport is moved as planned to the community of Szewic, 24 km north of the city center.

Table 5. Aircraft noise (L_{sr} and L_{eq}) in 1976 (according to MATERIALY WSSE, 1976)

Measuring station	Background noise L_{sr} in db(A)	Stationary noise L_{eq} in db(A)	Duration of L_{eq} in minutes
1	44,3	64,6	34,3
2	41,6	61,8	26,4
3	41,1	57,6	25,5

Zones of Concentration of Harmful Phenomena

One method of spatially distinguishing the environment of an urban area is to show the zones of concentration of harmful phenomena. This permits the degree of usability of specific areas of a city to be established in order to determine which areas should be residential, industrial, recreational and so forth considering the current state of the environment.

Przy bonitacji [translation unknown] the environment of the city of Wroclaw, the system of classification according to Brykowicz and Waksmundzki (1971), as adapted to Wroclaw's conditions, was accepted. As a basis for including areas in specific zones, the following hierarchy of hazards was accepted:

--Air pollution: dust fallout, the emission of SO_2 and other noxious gases;

--Transportation noise;

--Surface and subsurface water pollution;

--Microbiological hazards;

--All other hazards.

In accordance with the named criteria, the following areas are classified as being in noxious zones: Gadow Maly, Szczepin, Grabiszyn and Kleczkow--having much dustiness, large SO_2 emissions and other gaseous emissions (Grabiszyn); noise considered to be unbearable and microbiological hazards--the region of the southern part of Tarnogaj; and Kowal--significant amounts of gaseous emissions, much dustiness.

The following areas are in the threatened zones: Psie Pola, Stary Miasto, Tarnogaj, Rozanek, the strip along B. Krzywousty Street, Klecin and the Redzin irrigation fields. The overlapping of various degrees of a number of threats is characteristic of these regions.

Areas located in zones that are slightly disturbed are: Opatowice, Wojnow, Swojczyc, Pawlowice, Widawa, Pracze Odrzanskie, Strachowice and Muchobor Wielki. These are regions where few dangers are occurring, causing the relatively smallest disturbance to the environment.

All other areas of the city are considered to be a disturbed zone having the largest area.

Conclusions

An integrated orientation of the totality of problems associated with evaluating Wroclaw's environment permits proper control of municipal space. A knowledge of the complex problem of threats is one of the elements that will be of help in implementing effective protective measures and at the same time modifying the environment.

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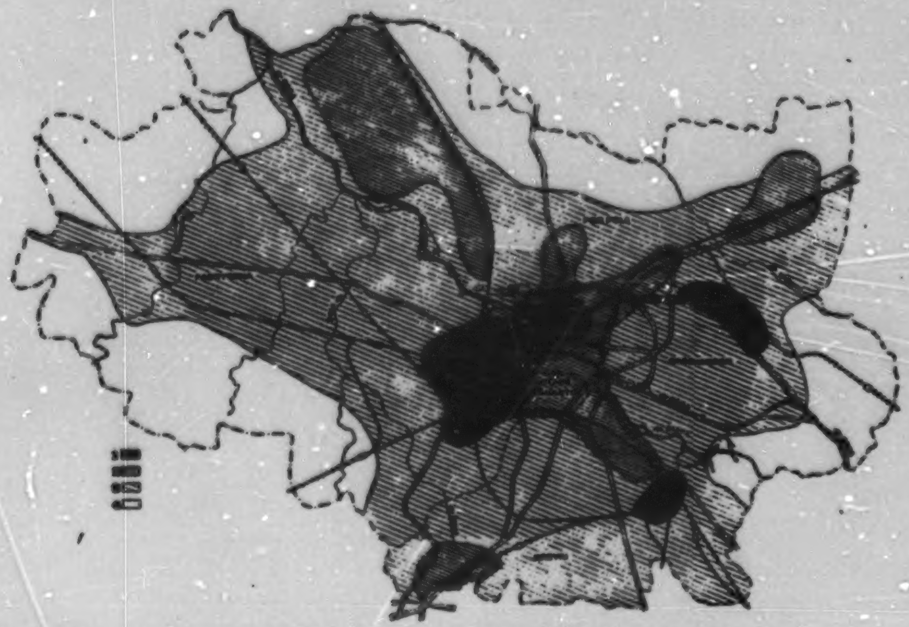

Figure 8. Map of concentration zones of noxious phenomena

Key:

1. Noxious
2. Threatened
3. Disturbed
4. Slightly disturbed

As a result of the overall evaluation of the scope of pollution and dangers occurring in Wroclaw (Figure 9), the average degree of noxiousness on the spatial scale of the city predominates. In case of close contact with ongoing threats, the degree of noxiousness increases from weak to average (and sporadically to strong) and from average to strong.

In the area of immediate improvements in the state of the environment, the following postulates should be realized: isolate noxious zones by means of green belts; centralize heat sources; build a central treatment plant for municipal and industrial sewage; improve the transportation system by eliminating trans transient traffic from the city center; and improve the flow of traffic and the condition of the street pavements.

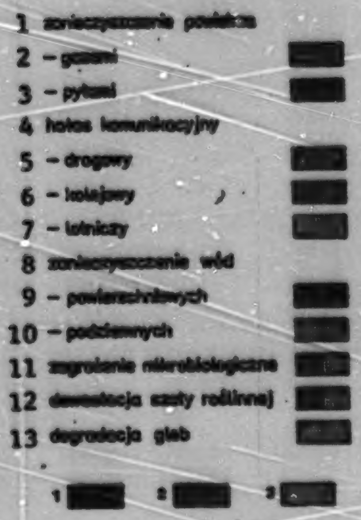

Figure 9. Degree of noxiousness of the main threats to Wroclaw's environment on a city-wide scale (1--strong; 2--medium; 3--weak)

Key:

1. Air pollution	8. Water pollution
2. By gases	9. Surface
3. By dusts	10. Subsurface
4. Transportation noise	11. Microbiological threat
5. Road	12. Devastation of vegetation
6. Railway	13. Degradation of soil
7. Aircraft	

FOOTNOTES

1. According to polish standards, the largest permissible mean daily concentration for protected areas are 0.35 mg/m^2 for sulfur dioxide, 0.001 mg/m^2 for lead, 0.02 mg/m^2 for zinc and 0.005 mg/m^2 for copper. In addition, the largest permissible mean dust fallout is 250 t/km^2/yr and 0.2 mg/m^2/day.

2. The insulating method is based on conducting air tests by filling special vessels with the air being tested. This method is used when the analysis method for the conducted air test is characterized by high sensitivity or when the concentration of the designated substance in the air is relatively high.

3. The aspirating method is based on passing a known volume of the air under test through a suitably selected liquid or solid absorbing substance (absorbents). The conducted air tests should continue until the designated substance becomes completely absorbed in the absorbent and the produced non-volatile compound reaches the proper concentration in the absorbent.

4. Surface water purity classes: I--water suitable for breeding salomoid fish; II--water suitable for community purposes; III--water suitable for industrial purposes; IV--water not meeting standards.

5. Mean noise level $L_{sr} = L_{50}$ - mean statistical level defining the value of sound level that is exceeded during 50 percent of the observation time.

6. Quasi-maximum noise level $L_{qm} = L_{10}$ - statistical level defining the value of sound level that is exceeded during 10 percent of the observation time.

7. Equivalent sound level; the mathematical value used to calculate the value of the periodically changing noise level.

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POLAND

ENVIRONMENTAL PROTECTION SYSTEM ASSESSED

Certain Problems

Warsaw GOSPODARKA PLANOWA in Polish No 10, Oct 82 pp 444-449

[Article by Miroslaw Gorczyca]

[Text] Economic activity must lead to the anthropogenic transformation of the natural environment. However, we must be concerned over how to minimalize the damage done to it. The socialist socioeconomic system, whose primary goal as most generally conceived, is to serve the needs of society through the optimal use of available resources including environmental resources, is especially bound to implement the principle of the "compliance of production relations with the requirements of ecology."

The major factors determining the proper solution of environmental problems include:

--organizational-legal endeavors creating the framework of environmental policy; they make illegal and threaten sanctions against behavior that menace the qualities of the environment and the rational utilization of resources;

--technical and technological solutions serving the protection of the natural environmental and the liquidation of violations arising therein;

--economic measures taken for the purpose of producing the proper motivation (together with punitive sanctions); these make the violation of environmental qualities unprofitable and the liquidation of their consequences profitable.

1. Protection of the environment has a recognized societywide scope in Poland. In the changes to the Constitution of the PRL [Polish People's Republic] that were resolved 10 September 1976, the environment was recognized as an all-national good, and the protection and development of the environment was recognized as a structural principle of the Constitution. Article 12, law 2 of the Constitution proclaims: "The Polish People's Republic ensures the protection and rational development of the natural environment, which represents an all-national good." Article 71 of the same law states: "Citizens of the PRL have the right to make use of the values

of the natural environment and the duty to protect it." Protection and the rational development of the environment are recognized as the sine qua non of the harmonious development of our country. A Experts' Team appointed in 1972 prepared the "Assumptions for a Program of Environmental Protection and Development" in our country up to 1990. The program assumptions comprise an evaluation of the current environmental situation are a forecast of changes in the environment. They likewise outline activities of a legal, organizational, scientific-research and technical nature indispensable for eliminating the consequences of pollution occurring to date, as well as ways to counteract the growing pressure on the environment resulting from the country's intensive economic development. The activities established for the program take into account the following basic principles of environmental protection policy:

--the policy of developing and protecting the environment represents an integral part of current state policy;

--he who conducts exploitational activity within the environment is responsible for its state;

--all industrial, municipal, agricultural and other structure, when becoming operational, must put into operation environmental protection equipment;

--modernization processes conducted in the national economy shall take into consideration the use of technology that is expedient from the viewpoint of environmental interests;

--the development of the domestic industry producing equipment for the needs of environmental protection and the development of the potential and specialization of contracting enterprises shall occur;

--research on the environment shall be expanded and the system of law shall be perfected;

--in the implementation of program assumptions, the total cooperation of all ministries, local authorities and society shall occur.

An all-Poland system of planning in environmental protection has been organized and is being perfected. Until recently this system took into consideration tasks in the area of marine and atmospheric protection. In the plan for the years 1976 through 1980, for the first time tasks in the field of the neutralization of industrial waste and soil recultivation have been separated. The principles, procedure and scope of planning have been prepared aimed at enabling units of the local administration to conduct the rational management of marine resources and pollution control.

2. The policy of environmental protection and conscious socioeconomic activity aimed at ensuring life in an unpolluted environment are reflected in legal regulations. They are legal-protective instruments serving the elimination of detrimental actions and stimulating action that fosters environmental protection. The legal regulation of environmental protection,

as a guiding element of the planned economy is executed in the form of standards having a varying range of influence and a hierarchy of legislative sources (the Constitution, laws, decrees and the like).

Legal questions of the protection and development of the environment and the rational utilization of its resources require a single, internally cohesive codification of legal standards. Until 1980, this demand was not fulfilled; particular legal documents at various levels of the legal hierarchy arose at different times. Under the conditions of diverse political and economic factors, these documents did not foster the creation of a system of uniform legal-protective instruments. The resolution by the PRL Sejm of a "Law Concerning the Protection and Development of the Environment" (a law dated 31 January 1980),* fulfilled this demand. This law, together with over a dozen obligatory and optional executory regulations, created an internally cohesive, uniform system for codifying legal standards in the field of environmental protection.

The most important provision of the law, a more detailed interpretation of the entry in the PRL Constitution, is the statement that the "RL ensures the protection and the rational development of the environment, representing an all-national good, and it creates conditions fostering the realization of the right of a citizen to make universal use of environmental values." The provisions of the law concerning environmental protection and development became effective 1 September 1980. An especially vital provision of the law is the creation of the State Environmental Protection Inspectorate, subject to the Ministry of Administration, Local Economy and Environmental Protection, headed by the Main Inspector for environmental Protection. Moreover, the State Council on Environmental Protection was created as an advisory and opinion-rendering organ for the Council of Ministers.

The law places the natural resources of the environment under the special protection of the law. In order to serve socioeconomic needs, these resources "may be used exclusively within the scope established in national socioeconomic plans and in plans of territorial development, and in regulations on environmental protection" (article 4). Environmental protection is a vital element of state socioeconomic policy, and its needs are an integral part of planned socioeconomic tasks. Of the general principles of environmental protection and development, a statement contained in article 7, item 2 merits special attention. It states that "an administrative decision contradicting the requirements of environmental protection is invalid." Regarding this, there arises the fear that such contradiction may not always carry the consequences issuing from the law.

Practically speaking, the most important provisions of the law are found in section three (Realizing Environmental Protection, articles 64 to 73). These comprise the duties of organizational units and private persons in this area. They concern the principles of environmental protection in investment activity, restricting the use of environmental resources, and the conditions with which machinery and other mechanical equipment are to comply. These articles point out that organizational units and private individuals conducting or intending to undertake economic activity that may be detrimental to the environment are obliged to use take measures ensuring its protection (article 64). This likewise applies to persons making use of the environment for purposes of tourism or recreation.

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*DZIENNIK USTAW, 1980, No 3, item 6.

All participants in the investment process are obliged to abide by regulations concerning environmental protection. No "newly constructed or modernized construction project or groups of projects may be put into operation if the environmental protection equipment required by regulations or stipulated within the framework of the given investment is not executed" (article 68). Machinery, raw materials and domestically produced and imported fuels should comply with the requirements of environmental protection.

The failure to abide by rigorously stated requirements in the field of environmental protection threatens one with the responsibility for the consequences of violating the state of the environment. Persons guilty of neglect are subject to arrest, restriction of their freedom, a fine or a reprimand. Depending upon the degree of guilt and the consequences of the violations of environmental purity that have been committed, causing a possible threat to human life and health or being a possible cause of serious economic damage, the perpetrator may be subject to a penalty of imprisonment of up to 8 years.

3. The solution to environmental problems should be sought primarily through the creation of an effectively operating system of economic incentive inclining, or rather, forcing potential perpetrators of environmental violations to take the appropriate precautions to avoid them and to eliminate the consequences of existing destruction. Economic means of environmental protection are to serve in the solution of this problem in the form of charges made for the economic utilization of the environment and the introduction of changes into it. These fees are charged for the special utilization of waters, the introduction of pollutants into the atmosphere, removal of trees and the utilization of farmland and forested lands for other purposes and for the storage of waste.

Environmental protection requires an ample supply of funds. For this reason, the Environmental Protection Fund was established. It is designated for the implementation of investment tasks, for providing additional financing of social acts (e.g., afforestation), for activity associated with waste management and for other purposes emanating from the needs of environmental protection.

A reading of particular articles concerning environmental protection and development, in whose wake a number of executory regulations have appeared, arouses many ambivalent reflections. Doubtless, we should be happy that a legal document of such scope has appeared in our country, a document that will be a powerful instrument of environmental policy, provided that its provisions are obeyed. On the other hand, the functioning of this system (and not only of this system) indicates the fact that even the best legislation of regulations cannot be an adequate remedy. The matter reduces itself to affording endeavors in the field of environmental development and protection the proper scope and to designating adequate outlays for them.

Fees for economic use of the environment and for changes made in it, introduced by stages, adjusted upward considerably and encompassing a broader and broader area of environmental values and advantages have been compulsory for several years in our country.

They are fees charged for: special usage of waters, the introduction of pollutants into the atmosphere, the removal of trees, the utilization of farmlands and forest lands for other purposes and the storage of waste.

Based on these charges and revenues from penalties imposed for failure to abide by the requirement of environmental protection, the Environmental Protection Fund has been established. Additional sources of income will be voluntary monetary and material-type contributions, as well as other income specified by the Council of Ministers. Monies from the fund will be used to cover the costs of endeavors in environmental protection or to provide additional financing for them. The amount of fees charged for economic use of the environment and fines imposed for failure to abide by the requirements of environmental protection, as well as authority regarding the procedure and collection of monies are defined in current executory regulations for the above-mentioned law concerning environmental protection and development, binding from 30 September 1980. The regulations of decrees concerning the above-mentioned fees and fines are applied toward organizational units or private individuals conducting economic activity. Organizational units and private individuals conducting economic activity incur charges primarily for: special usage of waters, the utilization of farmlands and forest lands for other purposes, the introduction of pollutants into the atmosphere, storage of waste in places designated for this purpose (in accordance with regulations concerning environmental protection against waste) and the removal of trees.

Fines are imposed for:

--atmospheric pollution exceeding the allowable types and amounts; for exceeding the allowable level of noise pollution as specified by a decision emanating from the regulations; for the removal of trees and shrubbery without the required approval of the local organ of the state administration at the primary level. The amount of fees and fines may be increased or decreased in relation to the obligatory rates in special cases specified by regulations.

4. The Central Office of Statistics [GUS] includes four types of outlays for environmental protection, namely investment outlays for: water management, water pollution control, air pollution control and the neutralization and management of industrial waste. This list is incomplete (e.g., it does not cover outlays for noise pollution control, radiation pollution control and the like).

In 1970, investment outlays for environmental protection amounted to more than 6.2 billion zlotys.* This represented approximately 3 percent of combined investment outlays as well as 0.8 percent of the national income. They included outlays for water management (4.464 billion zlotys), water pollution control (1.23 billion zlotys) and air pollution control (5.4 billion zlotys). Beginning in 1975, GUS adds to this group of outlays investment outlays for equipment for the management and neutralization of solid waste. Table 1 contains the statistical data on this subject.

Table 1

Investment Outlays in the Field of Environmental Protection from 1975 to 1979

Item	Years				
	1975	1976	1977	1978	1979
General investment outlays (in billions of zlotys) including (in percentages) those for:	12.953	19.185	21.180	21.920	19.817
water management	59.9	63.8	60.4	65.6	66.9
water pollution control	25.1	19.0	19.8	17.8	18.0
air pollution control	8.9	10.2	13.4	8.8	7.1
equipment for the neutralization and management of solid waste	6.1	7.0	6.4	7.8	8.0

Our country, with its level of investment outlays for environmental protection insignificantly exceeding 1 percent of the national income (if we allow for those outlays not mentioned by GUS), departs unfavorable from the level of outlays in other countries. Among the most highly developed capitalist countries, corresponding outlays amount to more than 2 percent of the gross national product. Even if we do not allow for the considerably higher base, this represents a share about three-fold higher. In this context, the fact that outlays in this field are treated residually is particularly disturbing; this is expressed in the drastic limitation of outlays for the environmental-science infrastructure in recent years.

Examples from the past irrefutably attest to the fact that investment outlays in the field of environmental protection have had a very limited financial scope, and a still smaller material scope. The unfavorable investment situation that has occurred in recent years has affected outlays for the environmental-science infrastructure especially severely. It is these investments, which have always been treated in a residual way, that are subject to special restrictions as unproductive, and these that are easiest to defer. This has had the spectacular effect of drastically limiting investment outlays for water management, which amounted to more than 48 billion zlotys from 1971 to 1975 and somewhat less than 70 billion zlotys during the following 5-year period. If we allow for price changes and inflation, we see that not only did investments in this field not increase, but most likely diministed in volume. An especially dangerous occurrence of the drastic reduction in investment outlays took place in the area of the construction of sewage treatment plants, outlays for which were lower from 1976 to 1979 than in 1975, and were reduced by 15 percent from 1977 to 1979.

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*In all cases, amounts are expressed in current prices.

Likewise in the municipal economy, outlays for water investments and water pollution control were inadmissibly reduced. In 1979, they were only 0.7 billion zlotys higher than in 1976 (10.5 percent). Allowing for the increase in prices, this represents a severe reduction in the volume of investments. The reduced outlays had the effect of considerably reducing the volume of investment construction, extending investment cycles and causing a decline in material results. The lack of land development in water-supply and sewerage systems, the most indispensable equipment in the environmental-science infrastructure, not to mention sewage treatment plants, has become a serious barrier to the implementation of the housing program and is probably the major cause of the failure to execute housing construction plans from 1976 to 1980.

Great, highly overrated hopes were linked to the implementation of the "Wisla" program, whose total implementation was threatened in advance, not only because of the megalomaniacally unrealistic scope of endeavors, but primarily due to the lack of suitable investment-project completion potential. Data for the years 1966 through 1975 confirm this. If, during the 5-year period 1966 to 1970, treatment plants with a daily capacity of 4.1 million cubic meters were put into operation, and during the next 5-year period, plants with a daily capacity of 3.9 million cubic meters were put into operation, from 1976 to 1979, plants with a daily capacity of 1.6 million cubic meters were put into operation. Likewise, material outlays in other groups of water management investments declined, although not to this degree.

Each year Poland incurs severe losses because of flood damage; from 1971 to 1979, such damage was estimated at 22 billion zlotys, or approximately 2.5 billion zlotys per year. Some of these losses are unavoidable to a certain extent, since the construction of storage reservoirs, whose implementation and operation costs would exceed potential flood losses, would be unprofitable. However, as the bringing into cultivation of lands exposed to the consequences of periodic flooding increases losses grow, possibly reaching tens of billions of zlotys in the next few years.

Manmade water reservoirs play an important role in limiting flood losses, in addition to their numerous other roles emanating from the fact that they provide for unified water management (tourism, recreation, sports, the fishing economy and the like). According to the situation at the end of 1979, there were 84 manmade water areas in Poland with a total per-unit capacity of at least 1 million cubic meters of water, for a combined one-time storage capacity of 2.7 billion cubic meters. These are generally old reservoirs, since only 10 manmade reservoirs for a combined capacity of approximately 0.4 billion cubic meters were built from 1971 to 1979. This is 2.5-fold less than during the 5-year period 1966 to 1970, confirming the regression observed in other groups of equipment in the environmental-science infrastructure.

In recent years, financial outlays for investments in the area of water management and water pollution control have shown an especially disturbing decline, e.g., from 18.3 billion zlotys in 1978 to 16.8 billion zlotys (in current prices) in 1979. There is the justifiable danger that, given conditions of a general economic recession, investments in the field of environmental protection will be most sharply curtailed. From year to year, monies from the Water Management Fund are not utilized. In 1979, less than 57 percent of the available funds were utilized. This was due to the lack of the processing capacity of construction.

Reductions in funding allocations have not bypassed investments in the area of air pollution control, which amounted to 540 million zlotys in 1970, 368 million zlotys in 1973 and 2.838 billion zlotys in 1977. In 1978, they were reduced to 1.941 billion zlotys, and in 1979 they amounted to only 1.402 billion zlotys. If we allow for the increase in prices of pollution control equipment and installation costs, the magnitude of the cutback occurring here is quite evident. In this context, the state of air pollution needs no further explanation.

Industrial plants, although not the sole polluters of the air, are major polluters. Of the 10 ministries financing investments in the field of air pollution control, the bulk of outlays issues from plants under the Ministry of Metallurgy and the Ministry of the Power Industry and Nuclear Power, which in recent years covered at least one-half to over three-fourths of the combined investment outlays.

Investment outlays for the neutralization and management of industrial waste from 1975 to 1979 respectively amounted to: 898 million zlotys, 1.346 billion zlotys, 1.366 billion zlotys, 1.713 billion zlotys and 1.596 billion zlotys. Most of these were financed by the Ministry of Metallurgy, the Ministry of the Power Industry and Nuclear Power, the Ministry of the Chemical Industry, the Ministry of Mining and the Ministry of Forestry and the Timber Industry. These participated in investment outlays in this area practically in their entirety. Especially noteworthy is the large share contributed to investment outlays by the Ministry of Forestry and the Timber Industry, in which waste that is the least harmful to the environment (i.e., it yields readily to soil biomineralization) is used to good advantage.

5. Environmental protection and development and the rational utilization of environmental resources is a field in which the use of cost effectiveness is possible but very difficult.

In analyzing the effectiveness of specific endeavors in the field of environmental protection, we should compare outlays borne in the implementation of a specific pollution control venture with the results attained in its implementation. In general, cost effectiveness is li[illegible]ed in regard to product [goods and services] to minimizing outlays in order to achieve a specific result, e.g., the attainment of a specific degree of sewage neutralization or a reduction in dust emissions.

Cost effectiveness accounting of endeavors in the field of environmental protection is a problem of extreme complexity. This complexity emanates primarily from the fact that it is impossible to put a price on many of the effects brought about by the improvement in environmental conditions. It is likewise difficult to gauge the cost to society of the worsening of the quality of life within the environment. Attempts are being made, especially in capitalist countries, to put a price on the worth of health and even human life (Cost-Benefit Analysis), but how do we price the value of the matchless beauty of nature and the song of birds? The fact that this is of great value --and not merely aesthetic value--is confirmed by income from tourism in countries and regions with especially attractive landscapes.

An evaluation of the investment variants under investigation, using currently applied methods of cost effectiveness accounting for investments actually includes the analysis of so-called non-cost-effectiveness factors; however, this is merely a descriptive-type analysis. A more complete expression of the socioeconomic effects of the implementation of ventures in the area of environmental protection is made possible by a C/ost-B/enefit A/nalysis. Within the C-B-A framework, effects that are difficult, even impossible to measure (e.g., human life) are quantified. When pricing elements of certain effects of these ventures are lacking, their theoretical valorization is carried out with the use of shadow prices or accounting prices. Having placed a value on the costs and benefits of protective ventures, the economist is in a position to succeed in revising the worth of the effects of cost-benefit analysis, taking into consideration all the facts including those recognized as immeasurable.

6. Poland is one of the poorest countries in Europe in terms of water outflow; during the last 30-year period, it amounted to 1,600-2,600 cubic meters per person per year. Of the approximately 14 billion cubic meters of water consumed in 1979 by the needs of the national economy, 70.6 percent was used for industry, 11.5 percent was used for agriculture and forestry and 17.3 percent went for the municipal economy. Water consumption in the national economy increased in the 1970's by more than 40 percent. Approximately 85 percent of the water consumed was obtained from surface-water intakes, 13 percent was underground water and 2 percent was mine water.

In 1979, approximately 2 billion cubic meters of sewage (43 percent) were discharged with no reduction in pollutants (untreated sewage). Of this, 32 percent was industrial sewage and 55 percent was municipal sewage. The situation regarding providing sewage treatment plants with treatment equipment that guarantees the adequate reduction of pollutants is unsatisfactory. Sewage treatment plants cannot neutralize all of the sewage flowing into them. Only about one-third of them have received sewage in amounts not exceeding their capacity, and in nearly half of all municipal sewage plants, the hydraulic load has exceeded their treatment capabilities by at least 50 percent.

Most treatment plants do not achieve satisfactory results in the liquidation of pollutants. This results primarily from the fact that of the 424 sewage treatment facilities in 350 cities, 155 have had available only equipment for mechanical treatment. Thus, not only has sewage from the 453 cities that do not have treatment plants been discharged untreated, but so-called "treated" used waters have become a serious threat to the quality of surface waters and to the biological life in these waters.

In comparison with the situation in 1973, when, of the 7.3 billion cubic meters of discharged sewage (including 63 percent cooling waters), approximately 2.2 billion cubic meters was sewage that required treatment, their volume increased more than two-fold in 1979. Unfortunately, this was not accompanied by a corresponding increase in the level of their neutralization. The decline in the share of treated sewage discharged into surface waters from over 70 percent in 1973 to less than 40 percent in 1979 indicates this. The wholly positive phenomenon of the increase in quality control of discharged and treated sewage is significant in the worsening of these ratios.

A reduction in water consumption and a decline in the discharging of pollutants may be stimulated using economic instruments, as shown by examples from other countries. The 1974 water law, introducing charges for water consumption for industrial use, has possibilities in this area. The water management fund was created on the basis of these fees. Currently they come into the Environmental Protection Fund. However, the above-mentioned lack of processing capacity in construction has meant that the bulk of monies collected in this fund has not really been able to be used.

Industrial plants and heating plants are considered to be especially harmful to the purity of the air. Calculated at 931 in 1971,they emitted an average of 2.2 million to 2.4 million tons per year of dust pollutants during the 1970's. While this amount did not change significantly in particular years, the amount of gas pollutants emitted continually increased. In 1973 it amounted to 2.5 million tons; in 1975 it exceeded 3 million tons, and in 1979 it approached 5 million tons. The amount of pollutants retained in reduction systems, which in 1978 amounted to 21.8 million tons of dust and 0.7 million tons of gas pollutants, in 1979 amounted to 25.7 million tons and 0.7 million tons respectively. In 1979, the amount of dust pollutants retained (by 0.03 million tons). This was surely caused by systems shutoffs due to the power shortage. Thus, the level of neutralization of dust pollutants increased from 91.4 percent in 1978 to only 91.5 percent in 1979; for gas emissions retained this indicator declined from 13.5 percent to 12.2 percent.

At the end of 1979, at least 846 million tons of industrial wastes harmful to the environment were stored in storage grounds, dumps and sedimentation ponds. In recent years, approximately 40,000 tons of wastes were added each year. Nearly 90 percent of this waste was collected by plants discharging at least 2,000 tons of wastes annually, while at least half came from plants with post-production waste of more than 20,000 tons per year.

The area of the storage grounds, dumps, dumping grounds and sedimentation ponds in which solid post-production waste was stored amounted to 8,429 hectares at the end of 1979, or nearly 2,000 hectares more than in 1975. 1979, 214 hectares (one-fortieth) were recultivated.

Municipal wastes disposed of in dumping grounds and sedimentation ponds amounted to nearly 50 million cubic meters in 1979, of which two-thirds was solid waste and one-third, liquid waste.

Municipal wastes pose a special problem due to the poor sanitary condition of the dumping grounds at which they are stored. At the end of 1979, the volume of post-consumption waste at 1,227 supervised dumping grounds amounted to 35 million cubic meters, or 1 cubic meter per capita. These dumping grounds, occupying 2,267 hectares, of which 636 hectares are located on municipal lands and 589 hectares are found in rural areas (primarily in the vicinity of cities), represent an unsatisfactory standard of environmental hygiene. In 1979, the standard of environmental hygiene in 40 percent of them was defined as decidedly bad.

Of the 31.2683 million hectares of land in our country, cropland occupies 61.2 percent, forests and afforested land--28 percent, land under water--2.6 percent, mining land--0.1 percent, transportation land area--3.0 percent, community area--2.6 percent and wasteland and other land--2.4 percent.

There is in Poland the continual process of a reduction in the area of cropland. By comparison with 1946, approximately 1.3 million hectares were withdrawn for non-agricultural purposes; this area declined from 0.85 hectares per person in 1946 to approximately 0.5 hectares at present. In order to limit this inevitable phenomenon, charges have been introduced for the withdrawal of land from agricultural and forest use. Unfortunately, 6 years after the law concerning the protection and recultivation of lands took effect (1971), the phenomenon of changing over lands for non-agricultural and non-forest purposes had not declined. For this and other reasons, these charges were increased about three-fold in 1978, causing a decline in the area of land withdrawn for non-agricultural and non-forest purposes had not declined. For this and other reasons, these charges were increased about three-fold in 1978, causing a decline in the area of land withdrawn for non-agricultural and non-forest purposes from 27,000 hectares in 1977 to less than 17,200 hectares in 1979. Most of these lands were soils and forest habitats of low quality, which the highly differentiated level of charges favors (from 1.6 million zlotys down to 0 zlotys, in the case of the withdrawal of wasteland).

The area of lands in need of recultivation (more than 108,000 hectares in 1979), and the low level of their recultivation and farming utilization (28,600 and 24,800 hectares in 1979) arouse concern. Moreover, the monies in the soil recultivation fund, amounting to billions of zlotys, are little used. For example, in 1979, of the nearly 4 billion zlotys paid in fees for the withdrawal of agricultural farmlands and forest lands for non-agricultural and non-forest purposes, less than 2.9 billion zlotys was used from the Soil Protection and Recultivation Fund.

In summarizing these considerations, we should emphasize that each country (Poland included) and each people as a whole can defer making trifling outlays for environmental protection in favor of increasing economic growth, expressed in terms of the increased production of per capita goods. The only alternative to such postponement can be the worsening of environmental quality, whose future restoration, if possible, cannot but cost considerably, more. The avoidance of pollution (deformation) of the environment and its rehabilitation, restoring the biological balance, are technically possible, socially necessary, ecologically indispensable and economically profitable, although we are not yet able to measure this profitably in full. The necessity to hasten growth or to get out of the economic crisis generally means that, due to the multitude of other needs, outlays for environmental protection are treated as residual and do not correspond either to needs or to the limited potential of our economy, especially during the recent period. Life in a healthy natural environment that is pleasing both to eye and ear is a sine qua non of the quality of life, properly understood. This is something we often fail to perceive under conditions of daily privation.

Planning System

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[Article by Edward Sitek]

[Text] In January 1980, the Sejm of the PRL [Polish People's Republic] passed a law concerning environmental protection and development that became binding 30 September 1980.[1] This law defines the duties of state organs economic units, social and trade organizations, and private individuals in the area of environmental protection. It sanctions the inclusion of tasks associated with environmental protection in national socioeconomic plans and plans of territorial development, an idea introduced recently into planning practice. It likewise imposes the obligation of taking into consideration aspects of environmental protection in the activity of state organs, organizational units and social organizations. According to the provisions of the law, the tasks and means ensuring effective environmental protection and the elimination of the consequences of actions having a negative effect on the environment are considered to be an integral part of the endeavors stipulated in national socioeconomic plans.[2]

The purpose of this article is to present the more important problems related to the inclusion in socioeconomic plans of the tasks of and the means indispensable for environmental protection on the basis of prior experiences in this area and anticipated changes in the planning system.

Tasks concerned with the protection of the natural environment have been marked out separately in national socioeconomic plans only recently. Within the broader scope, planning efforts in the area of environmental protection were initiated in Poland in 1973. At that time, a Government Team of Experts began work on a comprehensive evaluation of the current state of the environment, as well as on a forecast of changes and on directions of activity in the future. This team prepared a document entitled "A Comprehensive Program of Environmental Protection in Poland to the Year 1990." On the basis of this document, the Ministry of Administration, Local Economy and Environmental Protection, the leading ministry in this sphere of operation, prepared "Program Assumptions in Environmental Protection in Poland to the Year 1990."[3]

Next, in accordance with the forecast-program-plan sequence used in planning practice, a portion of the tasks specified in the program for the forecast period was comprised by the national socioeconomic plan for the years 1976 through 1980. Beginning in 1976, tasks in the area of environmental protection were likewise indicated separately in yearly plans. Investment tasks serving the following goals were formulated separately.[4]:

--air pollution control;
--water pollution control;
--the neutralization of industrial waste and land recultivation,
--forest pollution control,
--soil pollution control.

Plans in the area of air pollution control, water pollution control and waste management under the planning system in use until now were drawn up summarily by the Ministry of Administration, Local Economy and Environmental Protection on the basis of materials from the ministries and voivodship offices. In the area of forest pollution, the plan was drawn up summarily by the Ministry of Forestry and the Timber Industry on the basis of materials from the voivodship offices and the interested ministries. In the area of soil pollution control, the plan was drawn up summarily by the Ministry of Agriculture on the basis of data from the voivoidship offices and its own materials.

Tasks in the area of environmental protection specified for economic units embrace, e.g.:

--the construction of new sewage treatment plants or the modernization and expansion of existing treatment plants operated by economic units;
--participation in the construction of group or municipal treatment plants;
--the installation of dust and exhaust gas treatment equipment;
--the construction of storage grounds for industrial waste;
--the recultivation of exploited lands.

Prior experience in the area of including tasks and means ensuring environmental protection in socioeconomic plans is not extensive. Nonetheless, certain shortcomings in practice have become evident in this area. Very generally these include, on the one hand, excessive detailing in specifying tasks at the central level regarding elements of the environment and the fields of activity encompassed in planning, and on the other, the omitting of parts of tasks or the funds indispensable for ensuring the protection of other environmental elements or affecting other fields of activity in which problems of environmental protection occur.

In addition to our previous experience, doubtless the introduction of economic reform, which envisages changes in the system of planning, will bring many new elements into the inclusion of tasks associated with environmental protection in socioeconomic plans. In the draft of published reform assumptions[5] and in many statements on the subject in the press it is stressed that scrupulous attention to detail in specifying tasks and means should be avoided in central planning. Central planning should concentrate on the development of longterm state economic policy, on establishing the rate and proportions of development and on insuring the conditions of harmonious development of the economy and the entire social organism. The autonomous, self-governing enterprise is to be a key element in the economic system. The command-distribution system should be replaced by a set of economic instruments and regulations of the law. These assumptions were partially put into practice by Council of Ministers resolution No 118/80 dated 17 November 1980, concerning changes in the system of directing state enterprises in 1981. They leave a certain area of matters concerned with environmental protection in the exclusive, autonomous power of enterprises. General legal regulations create a sufficient foundation for the implementation of many tasks linked with environmental protection.

An analysis of the tasks emanating from the law concerning environmental protection and development against the background of the assumptions of the new economic reform demonstrates however, that legal regulations will not be sufficient to enable enterprises to resolve all problems associated with environmental protection independently. There will be external circumstances connected with the implementation of some tasks issuing from the law, which enterprises will not be able to overcome. Moreover, the autonomy of enterprises in accordance with the assumption of economic reform must mean their increased interest in attaining good financial results. Consequently, if the fines stipulated in legal regulations for violation of the environment are lower than the implementation costs of tasks to liquidate environmental threats that are occurring, these tasks will be postponed by enterprises under various pretexts. Thus, we may state justifiably that in some cases, legal regulations in the area of environmental protection will not represent a sufficient force, if the implementation of tasks is not secured from the financial, material and organizational aspects.

Therefore, the modification of the planning system in the area of environmental protection should aim in the direction of limiting the detailed specification at the central level of tasks for enterprises. At the same time, it should move into the direction of solving problems of securing the financial and material means indispensable for the implementation of tasks issuing from the law, as well as insuring the coordination of the tasks whose execution is conditioned by external factors.

As we examine the problem of planning tasks issuing from the law on environmental protection and development from a systems approach, we are able to isolate the following elements characterizing the goals, the kinds of means and the operating conditions vital to planning decisionmaking in this area:

1. Goals subset:

--air pollution control,
--water resource pollution control,
--neutralization of industrial waste and recultivation of lands,
--land surface pollution control (forests and soil),
--noise and vibration pollution control,
--counteracting the threat of radiation;

2. Means subset:

--financial means,
--the processing capacity of building construction enterprises and other organizational units executing structures and installing equipment serving environmental protection,
--construction materials and mechanical equipment produced by industry for environmental protection needs,
--the foreign-exchange fund for the purchase of imported equipment;

3. Operating conditions subset:

--the existing state of environmental protection in economic units,
--the interdependence of tasks in the area of environmental protection and of other endeavors implemented simultaneously in particular economic units,
--the achievements in science and technology serving environmental protection,
--legal standards concerning economic activity:

4. Criteria for selection:

--the requirements for the protection of particular environmental elements issuing from binding regulations as well as existing conditions in the area that are also projected for the future,
--the economic effectiveness of possible alternative technological solutions.

By comparing the scope of current planning with the elements of the systems approach that create the subset of goals and the subset of means we see that not all elements of these subsets are embraced by socioeconomic planning on the national scale (see table 1).

Table 1: Elements of Planning Decisionmaking in the Area of Environmental Protection (Subsets: Goals and Means)

	According to a Systems Approach	Currently Comprised by a Separate Part of the National Socioeconomic Plan
Goals Subset	Air pollution control	Investment tasks serving these ends are included in planning
	Water resource pollution control	
	Neutralization of industrial waste and recultivation of lands	
	Land surface pollution control (forests and soil)	
	Noise and vibration pollution control	These goals are not included in the current system of planning
	Counteracting the threat of radiation	
Means Subset	Financial means	There is a specified limit of investment outlays for the implementation of particular tasks
	The processing capacity of building construction enterprises and other organizational units executing structures and installing equipment serving environmental protection.	The maximum amount of outlays for building-construction work is specified, indirectly enabling an estimate of the amount of contractors' processing capacities needed
	Construction materials and mechanical equipment produced by industry for environmental protection needs	These means are not included in the current planning system
	The foreign-exchange fund for the purchase of imported equipment	As above

With regard to the goals of environmental protection listed in table 1, the national socioeconomic plan currently does not isolate tasks concerned with noise and vibration pollution control and counteracting the threat of radiation.

Obviously not all tasks associated with noise and vibration pollution control and with counteracting the threat of radiation qualify for inclusion in the national socioeconomic plan in the area pertaining to environmental protection. In accordance with currently binding regulations, there is the required use in new investment structures of such technological measures as would prevent the creation of noise or vibrations in, or their penetration of, the environment.[6]

The implementation of tasks whose goal is noise pollution control within new investment structures is thus a complementary part of the entire investment venture. In this case, the preparation and implementation of tasks in the area of noise pollution control are linked closely with the preparation and implementation of the basic investment. The financial means for the implementation of these types of tasks are included in the summary statement of costs for the entire investment. The inclusion of the basic investment in the socioeconomic plans means that the financial and material means for the environmental protection tasks implemented within the framework of this investment will be guaranteed as well. Thus, it is not necessary to isolate this type of task in the part of the socioeconomic plan that concerns environmental protection issues.

Of course, the above statement concerns not only tasks associated with noise pollution control, but also tasks for protecting the environment against other disturbances and pollutants.

In plans now being prepared, tasks projected for implementation in new structures are designated by the symbol N, while tasks projected for implementation in existing structures are designated by the Symbol S. However, this differentiation is of no practical significance. Both types of tasks are treated alike. This evokes much controversy in the planning process, particularly in accounting for the implementation of tasks encompassed by the plan. When reports are made on the execution of the plan, there is no allowing for the fact that the implementation of environmental protection tasks in newly constructed units and structures is justifiable only when the basic investment is implemented. In this case, environmental protection issues are secondary; they become the consequence of actions aimed at achieving other, primary ends, and not ends in themselves. In the event that the implementation of a planned basic investment is postponed or abandoned, the construction of treatment equipment becomes pointless.

Thus, when recommendations are made concerning the tasks to be included in plans of environmental protection, what should be given primary consideration are not the requirements issuing from the currently planned construction or expansion of industrial plants and other structures, but the need to repair what was neglected in the past as well as the needs of environmental protection emanating from the noninvestment development of existing economic units. In many economic units, there is also the need to modernize or expand treatment equipment that is excessively worn out, unproductive or technically obsolete. Adequate financial and material means should be guaranteed in socioeconomic plans for the implementation of investment tasks consisting of the construction or installation of environmental protection equipment.

In the area of noise pollution control, to the extent that it is possible, planning should embrace those tasks whose implementation would limit pollution to the environment caused by the excessive diffusion of noise created in industrial plants built earlier, on transportation lines and in other structures. For example, a reduction in noise pollution may be attained by replacing noisy machinery and equipment with other, less noisy machinery and equipment, by enclosing or screening the sources of noise, by creating and managing protective zones so that the diffusion of noise in areas adjacent to the major sources of noise emission is checked and by isolating the route of noise diffusion with natural screens (earthen banks, green belts).[7] The financial and material means should be guaranteed for the implementation of such tasks.

The need to isolate tasks in the national socioeconomic plan in the area of radiation pollution control is not so express. Regulations specifying the method for protecting the environment against the negative effect of radioactive substances and equipment producing electromagnetic fields have been long-since binding and are enforced consistently. Tasks in this area are implemented by economic units within the framework of ongoing exploitational activity, and in new investment structures they are a complementary part of the total venture.

In socioeconomic plans currently in preparation, of the elements in the means subset, the estimated costs of tasks in environmental protection credited to particular economic units are itemized, as is the limit of investment outlays in general and the limit of outlays for building-construction work associated with the implementation of these tasks within the given planning period. The specification of the limit of outlays in general is equivalent to the allocation of the financial means for the implementation of investment tasks detailed in the environmental protection plan. Limiting outlays for building-construction work makes possible the designation of the processing capacity of building-construction enterprises in the construction plan, as well as the inclusion in the raw and other materials balance of needs in the area of building materials of general designation.

Practice demonstrates that the current system of construction planning and organization does not insure the implementation of many investment tasks in the area of production of the natural environment. In many cases, tasks outlined in the socioeconomic plan are not implemented due to the lack of contractors. Large building-construction enterprises unwillingly undertake environmental protection tasks whose estimated cost value is relatively small in comparison with other investment tasks. There is a shortage of small, specializing enterprises that could implement environmental protection tasks. Thus the demand should be made that the newly introduced economic reform favor the creation of small and average size building-construction enterprises in all voivodships. Of course, the advisability of creating such enterprises emanates not only from environmental protection needs, but is also warranted from the viewpoint of other needs (e.g., housing construction, municipal construction and social construction).

Guaranteeing execution does not exhaust all of the means indispensable for the implementation of environmental protection tasks. Deliveries of the technical equipment needed for reducing environmental pollutants are indispensable for the execution of many tasks. The impossibility of purchasing such equipment produced domestically and the unavailability of a foreign-exchange fund for purchasing imports until now has been another factor hampering the implementation of tasks in the area of environmental protection.

In the planning system used until now, production tasks for domestic industry concerning deliveries of technical equipment serving environmental protection needs were not isolated; nor was the foreign-exchange fund for purchasing such equipment through import. The problems of meeting the need for technical equipment to reduce pollutants, of insuring deliveries of the necessary equipment by domestic industry and of securing foreign-exchange funds to import equipment not produced domestically should not be omitted in the new system of planning.

Environmental protection plans currently in preparation essentially include only investment tasks. Tasks emanating from environmental protection needs manifested in other types of activity carried out by economic units are not included in planning. Environmental protection problems occur in various fields of activity conducted by ministries, organizations and economic units.

Environmental protection tasks of ministries and economic units synthesized in article 55 of the law (see table 2) show that, apart from the planning and implementation of investments, the more important fields of activity in which environmental protection problems occur include in particular: operational activity and scientific-research activity.

In the operational activity of buildings there are mainly problems of the proper functioning of environmental protection equipment as well as questions of economic usage or the neutralization of waste that threatens the environment.

Table 2: Tasks Specified in Article 66 of the Law Concerning Environmental Protection and Development

Contents of the task according to article 66 of the law	The field of activity of ministries and economic units in which the task is manifested
Locating the means of production in a manner least harmful to the environment	Territorial programming Establishing the location of an investment

(Continued on following page)

Insuring in economic activity under preparation or being conducted the required protection of natural elements or their parts and their restoration to their natural state	The preparation and implementation of an investment Operational activity The planning of endeavors in the environmental protection area
Concern over the landscape values of the environment	Establishing the location of an investment Preparing the design documentation
The use in economic activity of technologies and technological solutions creating the least possible threat to or pollution of the environment	The preparation of the design documentation of the investment The introduction of technological innovations
The construction or installation and guarantee of the efficient functioning and operation of environmental protection equipment	Investment implementation and design Operational activity The planning of ventures in the area of environmental protection
The installation of control-testing apparatus and the carrying out of the indispensable tests	Operational activity
Making allowances for the requirements of environmental protection in designed, constructed and produced machinery, technical equipment and other products	Scientific-research work and experimental-construction work Product construction design
The economic utilization of waste and sewage or their successful neutralization or liquidation	Operational activity The planning and implementation of ventures in the area of environmental protection

(Continued on following page)

Taking advantage of scientific and technological achievements, using economic, legal and organizational means for protecting the environment	Scientific-research activity Legal-organizational activity

The implementation of tasks associated with environmental protection within the framework of ongoing operational activity is financed out of turnover funds, the work safety and hygiene fund and the repair fund. The inclusion of such tasks in separate environmental protection plans would not be warranted due to their immediate nature. However, material-technical needs arise within the framework of this activity, especially in the area of specialized control-testing apparatus for making quality checks of separate environmental elements. Most of this equipment is not included in durable resources and is installed by economic units within the framework of operational activity. The problem of guaranteeing the possibility of the purchase of this type of equipment by interested economic units must be solved. This problem is identical to the above-mentioned problem of guaranteeing the possibility of the purchase of equipment for reducing pollutants of particular environmental elements.

In practice there is quite a severe shortage of control-testing apparatus for environmental protection needs. Existing production capabilities in domestic industry are not sufficient to cover needs in this area. Moreover, only certain kinds of control-testing equipment are produced domestically, and others must be imported. Given the existing situation, there emerges the demand for adopting solutions in the planning system to enable needs in the area of control-testing apparatus to be considered by domestic producers in their production plans and programs of production capacity development, as well as by units of foreign trade in import plans.

Within the framework of scientific-research activity, work is being implemented whose results, although they serve other purposes, may be utilized for the needs of environmental protection as well. Much work that has been undertaken serves environmental protection needs exclusively. It would be useful if the more important topics from the first group of efforts and all topics from the second group were considered in plans of technical progress. The designation of problems in preparation in the environmental protection plan and the specification of leading units would facilitate considerably the coordination of implemented efforts by particular scientific-research institutions. This is especially vital in light of the ever broadening international scientific-technical cooperation in the area of environmental protection problems.

Recommendations of great importance to the contents of socioeconomic plans follow from the need to limit the excessive emission of harmful substances into the environment, resulting from the use of unsuitable equipment or technological processes by some industrial plants. In order to limit the harm done to the natural environment, it even becomes necessary to halt production activity in some plant departments. For example, the president of the city of Krakow, making use of powers defined in article 31 of the law concerning environmental protection and development and in paragraph 8 of a Council of Ministers decree dated 30 September 1980, concerning air pollution control, during the first few days of January 1981 ordered the Aluminum Works in Skawina to halt production in the aluminum electrolysis department. The purpose of this action was to liquidate the emission of fluorine and its compounds into the air. At the same time, the decision was made to close the viscose fiber plant at the Lodz "Anilan" plants and to halt the production of cellulose at the "Chemitex-Celwiskoza" Chemical Fibers Plants in Jelenia Gora, for the purpose of air pollution control.[8]

The above decisions, doubtless right and warranted from the viewpoint of environmental protection, had major economic consequences. For example, halting production in the aluminum electrolysis department in Skawina means that this raw material will have to be imported until a high enough level of production is reached at the Aluminum Works in Konin. For 1981, import needs were initially set at approximately 20,000 tons of aluminum.[9] The closing of the cellulose plant in Jelenia Gora will mean a reduction in the production of bleached sulfite cellulose by approximately 24,000 tons a year.[10] These consequences could have been avoided if economic activity had been coordinated earlier with the requirements of environmental protection within the framework of socioeconomic plans of the appropriate ministries and enterprises.

We may conclude from the above that this type of task, both halting production activity and changing production technology in order to limit the harmful effect the industrial plant has on the natural environment, should be included in environmental protection plans, along with the designation of the means indispensable for the implementation of these tasks and for preventing the occurrence of negative economic consequences. A situation requiring halting production activity in some departments or removing some equipment from operation because of the requirements of environmental protection does not arise overnight. Including this type of intent in the plan creates an inducement for undertaking the appropriate endeavors enabling undesirable disruptions of economic activity to be avoided.

Both on the basis of previous experience and in light of the assumptions for modifying the planning system that are taking shape within the framework of the newly introduced economic reform, some observations suggest themselves regarding the sphere of planning of investment tasks in regard to plants and equipment for environmental protection at the central level and at intermediate levels.

Practice up to this time regarding the plant and equipment sphere of preparing investment plans in the area of environmental protection in the ministry system demonstrates a certain type of inconsistency that reduces itself primarily to the fact that in some cases less important tasks are specified in a plan being prepared at the ministry level and more crucial tasks are omitted. For example, a plan of ventures linked with air pollution control is prepared for plants named indivudually in a directive issued by the Ministry of Administration, Local Economy and Environmental Protection. A plan of undertaking in the area of water pollution control is prepared for units that discharge 40,000 cubic meters or more of sewage annually into surface waters. Regarding industrial waste management, a plan is developed for plants that intend to implement investments, as well as for those plants that produce a total of 5,000 tons or more of waste per year. For plants not conducting investment activity in the area of waste management, only information concerning the amount of production waste used economically and the area of land being recultivated is published.[11]

Other economic units are not included in the planning of investment tasks in the area of environmental protection, although some of these may be very heavy sources of pollution of the natural environment. The failure to include tasks for these units in the environmental protection investment plan signifies--according to the currently binding economic-financial principles--that the means for the implementation of these tasks are lacking and, as a consequence, these sometimes significant sources of environmental pollution will remain so.

We conclude from the above that both the product [goods and services] area of tasks in the field of environmental protection currently included in planning and the sphere of the investment [plant and equipment] designation of these tasks must be modified.

It is indispensable that new principles be prepared concerning the degree of detailing and the method to be used for assembling the tasks and implementational means established at particular levels of management. These should take into consideration the general assumptions of economic reform, and in particular recommendations emanating from the assumption concerning the autonomy of enterprises and the increase in territorial self-government.

There is no doubt that tasks and means in the plans of economic units should be outlined in detail. As we enter a higher level of management, it is indispensable that the tasks and means be assembled in a manner insuring that the entire sphere of activity is included in the plan, and enabling the execution of the transfer of funds for implementation among the particular units in the event that a situation arises that is not anticipated in the course of preparing the plan.

Analyzing the conclusions drawn from previous experiences in the area of the planning of the tasks and means for environmental protection, and taking into consideration economic reform assumptions, we may conclude that the planning of tasks in the area of environmental protection regarding plant and equipment needs should lie within the power of local authorities. The ministry system is not suitable for this purpose; local authorities are more aware of needs in this area than ministries.

As noted above, the autonomy of enterprises must mean shifting the burden of planning in the area of environmental protection to financial matters. The financing of some tasks in environmental protection, especially tasks manifested in the sphere of ongoing operational activity, will be an element of operational costs for enterprises. Some of these tasks will also be financed out of enterprise funds derived from writing off amortization. However, enterprises will have to be allocated financial subsidies for the implementation of larger scale investment tasks.

According to the draft of economic reform assumptions,[12] infrastructural and nonproduction investments, which also include investments associated with environmental protection, should be financed out of funds from the central budget or from local budgets. Thus, with regard to tasks associated with environmental protection whose implementation requires outlays of financial means, the following principles may be adopted:

1. The central plan defines the amount of financial means for destruction to the particular voivodship authorities out of the central budget and out of funds for that purpose, such as: the water management fund, the environmental protection fund and the land protection and recultivation fund.

2. Local officials, supplementing the funds apportioned to them with their own funds if necessary, allocate them to particular economic units for the implementation of the specific tasks that are the more important priority tasks for the planning period, and whose implementation is secured from the material aspect and from the possibility of construction work.

3. Besides apportioning the financial means to voivodships, the central plan specifies by name the important tasks in terms of plants and equipment that call for the need to undertake ventures in other fields of economic activity and require intervoivodship coordination.

4. The balancing of financial needs at the central level and the preparation of a draft of the budget estimate of funds to be distributed among the particular voivodships and ministries lies within the power of the Ministry of Administration, Local Economy and Environmental Protection.

According to the assumptions of economic reform in the area of enterprise financing of investments and the financing of investments from voivodship budgets, there should be no limit set at the central level. These outlays should be specified in the central plans and a balance-sheet estimate should be given. These principles should likewise be applied regarding investments associated with environmental protection.

The financial means designated for environmental protection by enterprises out of their own funds, and by local authorities cut of their budgets should not be restricted centrally, nor should they be omitted in macroeconomic accounting. In order for the percentage of the national income designated for the protection and rational development of the environmental to be correctly determined, in the sumtotal of financial outlays for this purpose all components should be taken into account.

If the aforementioned planning solutions are adopted for usage, it would be indispensable to prepare and publish the financial principles of tasks associated with environmental protection being executed by enterprises, as well as an accounting of the subsidies received for this purpose.

The planning of financial means for environmental protection should be accompanied by the programing of material and organizational endeavors in this area. There is the need to create a model of the desirable situation and to outline ways for attaining this situation in activity associated with environmental protection. Hence the need for programing, consisting of the precise definition of the goals of the activity of a given system, the implementational means and the methods for achieving envisaged goals.[13]

Sometimes the concepts of program and plan are treated as equivalent in the literature on the subject.[14] This results from the fact that both are the basis of future activity.[14] Although programs and plans regarding a given field of activity during a specific period have many common elements, they differ from the viewpoint of the degree of precision, the scope and comprehensiveness of dealing with questions, the manner in which they handle giving directives and their designation.

At the programing stage, an analysis of the existing situation is done and the conditions are described that must be fulfilled to insure that envisaged goals are reached. The results of this analysis are the foundation for the definition of indispensable tasks for implementation by organizations and economic units. Programs, which are the ultimate orientation of the plan, also indicate the more important conditions and limitations and the organizational endeavors that must be undertaken. Thus, program materials include much information of usefulness when planning decisions are made. However, they cannot replace plans, the contents of which emanates from a successive phase of concretization of proposals concerning tasks and implementational means.

Programs concerning environmental protection vary in character depending upon the subject area, the local range and the temporal scope.

Comprehensive programs of environmental protection in economic units that embrace all types of activity and outline the indispensable implementational means for this goal have much practical usefulness. Such a program facilitates the preparation of the set of tasks to be comprised by socio-economic plans, taking into consideration financing possibilities, the meeting of material-technical needs and the guarantee of execution. If economic units have comprehensive programs of environmental protection, the coordination of tasks in this field in the local system is likewise facilitated.

Of course, the advisability of having a comprehensive programs of environmental protection does not affect all economic units equally. The determining factor warranting such a program for an economic unit is the occurrence of sources of pollutants and the existing state of protection of particular elements of the natural environment.

In addition to comprehensive programs of environmental protection, problem programs devoted to the solution of selected environmental protection problems on the scale of the economic organization, the ministry or a specific area of the country are also useful. For example, we can name here a program of production development of treatment equipment and control-testing apparatus, a program of the economic utilization, neutralization or storage of toxic waste and a program of water retrieval from municipal sewage and its utilization for industrial purposes.

In programing efforts within the broad scope, information-type tools describing known methods of reducing pollutants, available treatment equipment, methods of the economic utilization or neutralization of waste and the like should be used.

Obtaining this type of information will help enterprises to prepare programs to streamline activity directed toward achieving results in the area of environmental protection which are required by legal regulations.

Special care is required on the part of the organs coordinating activity in the area of environmental protection in the order of the planning and programing procedure in a manner that insures the implementation of tasks emanating from the law concerning environmental protection and development, and that complies with the general assumptions of economic reform.

FOOTNOTES

1. See DZIENNIK USTAW 1980, No 3, item 6.

2. See article 5 of the law concerning environmental protection and development.

3. See B. Poplawski, "Protection and Development of the Polish Natural Environment during the 1970's," GOSPODARKA PLANOWA 1980, No 3, p 131.

4. See "Instructions for the Preparation of the Draft of the Socioeconomic Plan for 1981 and for the years 1981 through 1985," Council of Ministers Planning Commission, Warsaw 1980, p 70.

5. "Basic Assumptions of Economic Reform (a Draft)," TRYBUNA LUDU, January 1981, point 3.

6. See the law dated 31 January 1980, concerning environmental protection and development, article 49, paragraph 2, and the law dated 24 October 1974 "Building Law," DZIENNIK USTAW, 1980, No 38, item 229, articles 5, 13 and 53.

7. See A Podniesinski, "Podstawowe problemy ochrony srodowiska w Polsce" [Basic Problems of Environmental Protection in Poland], Warsaw 1979, p 157.

8. See a PAP communique published 5 January 1981 and an article by Professor Dr Engineer Wlodzimierz Surewicz published in TRYBUNA LUDU, 15 January 1981.

9. See TRYBUNA LUDU, 7 January 1981.

10. According to the data contained in the above-quoted article of Professor Dr Engineer Wlodzimierz Surewicz.

11. See "Instructions for the Preparation of the Draft of the Socioeconomic Plan for 1981 and for the Year 1981 through 1985," op. cit., p 73.

12. Point 44 of the above-quoted draft of economic reform assumptions.

13. See "Programowanie rozwoju gospodarczego" [Programing Economic Development], Warsaw 1975, p 64.

14. See, e.g., P. Sulmicki, "Planowanie i zarzadzanie gospodarcze" [Economic Planning and Management], Warsaw 1971, p. 157.

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CHICHONAL VOLCANIC ASH FLOATING TOWARD TUXTLA GUTIERREZ

Communities Still Cut Off

Mexico City EXCELSIOR in Spanish 14 Apr 82 pp 1-A, 13-A, 33-A

[Article by A. Garza Morales, EXCELSIOR correspondent]

[Text] Pichucalco, Chis., 13 April--Soldiers today encircled the Chichonal volcano in order to prevent access to curious persons because of the danger from ashes and hot sand.

It was revealed that the geologist Salvador Soto Pineda who was in the municipality of Francisco Leon, is reported missing. He arrived in the area last week to study the eruptions.

Several army companies were not able to reach the camps and the district of Francisco Leon, where it is surmised that there are thousands of victims.

General Mario Murillo, commander of the 20th Military Zone, is coordinating the rescue tasks, aided by Red Cross, ISSSTE [Institute of Social Security and Services for Government Workers], Social Security, and Coplamar members.

The attempts that were made today to arrive by helicopter were thwarted, because the volcano continues to emit dust and a cloud of ashes covers a surface of more than 13 kilometers.

It is not possible to go there by land, because the sand prevents this, and also the heat that the volcano discharges scorches the soles of the soldiers' boots. The fate of people trapped since this past 28 March, when the volcano first erupted, is not known. Clouds of dust continue to float toward Tuxtla Gutierrez and the Gulf of Mexico. It is not possible to predict when the eruptions will end and when the smoke will stop coming out.

A group of army parachutists is ready to be dropped over Francisco Leon when weather conditions make this possible.

This morning, at 0330 hours, there was another eruption, but a more moderate one than that of 28 March, and a slight earthquake was felt in Villahermosa.

The military command reported that the zone will continue to be closed until access is possible.

At present there are 33,000 refugees in various shelters located in Tabasco. Some are in the assembly room of the Tomas Garrido Canabal Park and in the Plaza de Toros in Villahermosa. There are also some in school buildings in Macuspana, Cardenas, and in places in Chiapas.

No one will be able to go to the volcano area, unless he is part of the army rescue squad.

In Villahermosa the governor of Tabasco, Leandro Rovirosa Wade, is coordinating the administration of assistance to victims.

The STPRM [Mexican Petroleum Workers Union] Reverses Itself

The Mexican Petroleum Workers Union has rescinded its offer to grant a thousand positions to the victims and to make possible their resettlement in various localities of the country, since the towns in which they lived have been almost completely destroyed. Those most affected are Chaputenango, El Volcan, Guayabal, Guadalupe Victoria, Teapa, and La Libertad.

The government of Tabasco is distributing food, clothing, and medicine to the refugees.

It is estimated that about 2 more weeks will pass before the volcano allows the return of the rural poeple to what remains of their homes. Instructions have been given to divide construction materials among the victims and also to pay them wages for their masonry work.

According to Juan Sabines, governor of Chiapas, there are about 45,000 heads of family without employment, who before the catastrophe worked on cacao tree and banana tree plantations and who gathered fruit.

Cattle ranches were also greatly damaged, and even though the rain that fell yesterday somewhat cleansed the pasture grounds that were covered by ashes, fodder is being received from other entities to save the cattle.

Manuel Aguirre Bravo, chief of the SAHOP [Secretariat for Human Settlements and Public Works] in Chiapas, said yesterday that seven small communities--whose population has not yet been precisely determined--were buried by the ashes, sand, and stone hurled by the Chichonal volcano. The erupted material was 10 meters thick and its temperature exceeded 200 degrees, which is why the rescue and salvage squads have not been able to reach the communities.

He also said that President Lopez Portillo has allotted 90 million pesos through the Unilateral Coordination Agreement (Federation-States) to repair the damages caused by the eruptions in Chiapas.

This sum will be allotted to the towns of Pichucalco, Ixtacomitan, Rayon, Pueblo Nuevo, Tapilula, Bochil, and Totol.

Aguirre Bravo explained that, in cooperation with the Airports and Auxiliary Services organization, the cleaning of the Llano San Juan Airport in Tuxtla Gutierrez is being continued, where it is foreseen that air operations will be resumed on Friday.

Engineer Ruben Valenti Fuentes, chief of the SAHOP Center in Tabasco, reported that the urban infrastructure in the towns of Teapa, Tacotalpa, and Jalapa will be expanded in order to shelter the victims.

Also in that entity the cleaning of the roads, such as the Villahermosa-Frontera, Cardenas-Comalcalco, and Macuspana-Ciudad Pemex roads, is going on.

Status of Volcano Uncertain

Mexico City EXCELSIOR in Spanish 14 Apr 82 p 13-A

[Article by A. Garza Morales, EXCELSIOR correspondent]

[Text] The first technical report made known yesterday by the Geophysics Institute of the UNAM [National Autonomous University of Mexico] states that there is great uncertainty concerning the future activity of the Chichonal volcano, since on the one hand it may decrease gradually in size, or it may increase until it reaches explosive stages, attaining at least the same magnitude as at the beginning.

From the point of probability, 7 out of every 10 volcanos will become explosive again; 3 will not. It has been observed that in the case of those that give evidence of new activity, the explosive periods occur after weeks (?) of slight activity.

The report recommends that the volcano be closely watched for several months, especially within a radius of 15 kilometers.

With respect to the eruptive history of the Chichonal volcano, the report says that it has been active since the end of the Pliocene epoch or the beginning of the Pleistocene epoch; that is, for some 500,000 or 700,000 years.

The most recent activity was reported in 1930, at which time seismic activity and an increase in fumarole activity (sic) were observed. There are also unconfirmed reports that there was some very slight activity about the middle of this past century.

At the present time, the eruptive column was more than 10,000 meters high and erupted at supersonic speed in its first stage. Its ashes are spreading chiefly to the north, owing to the prevailing winds and are 12 centimeters thick in Macuspana (40 kilometers north of the volcano) and 5 centimeters in the city of Villahermosa (80 kilometers north of the volcano).

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STRIKE AT WATER PURIFICATION PLANT HURTS PARIS WATER SUPPLY

Paris LE POINT in French 5-11 Apr 82 p 101

[Article by Stephane Bugat: "Strike: Blackmailing Pollution"]

[Text] All it took to once again expose the hostage Seine to pollution was the shutdown of the Acheres purification plant due to a strike.

Two million cubic meters of wastewater [have been] discharged daily since the Acheres purification plant was put out of action by a strike; the Seine did not need such a misfortune.

It all began with complaints by employees of the technical service of water and sanitation of the City of Paris. They work in the water treatment plants at Ivry, Orly, and Saint-Maur, as well as the Acheres purification plant, the largest and most modern of its kind in Europe.

In December 1981, the municipality proposed a cutback in the weekly work schedule from 39 hours 24 minutes to 37 hours 24 minutes. This schedule, along with the gradual introduction of a fifth shift, is in accord with the government's proposals for public service workers. It was approved unanimously by the joint technical committee, which includes CGT representatives.

A few days later, however, a new turn: The leaders of the same union, clearly pressured by their rank and file, called for a further reduction--to 33 hours 36 minutes.

Such a demand could only lead to a deadlock. Paris Mayor Jacques Chirac retorted: "There is no question of my answering this new demand, neither this year nor next year. There are limits to be respected," he said several times. The strike was therefore launched on 8 March.

Immediate result: The city must find an emergency supplier to meet the demand for drinking water. Parisians use some 800,000 cubic meters daily, of which 500,000 come from groundwater sources. To make up the 300,000-cubic-meter shortage, the city turned to the General Water Company, which supplies an intercommunal association of 144 suburban localities. It was simply a matter of invoking the permanent reciprocal agreement that calls for the capital and the intercommunal association each to come to the other's assistance in case of need.

The situation is rather more serious, however, in the case of Acheres. That plant treats the polluted water of Paris and its urban area (about 6 million people) virtually by itself. When it is not operating, the only alternative is to dump the sewage in the Seine, with obvious consequences. The only possible precaution is to spread out the dumping points. That is what has been done since 8 March.

It is true that we are not in a low-water period, when the river is particularly vulnerable. With the help of heavy rains, its current flow is 900 cubic meters/second, which helps to dilute the pollution. The technicians of the Seine-Normandy Basin Agency, who do analyses based on samples taken every 2 days, are not being alarmist about the situation.

However, can the dumping continue without damage? The Acheres strike committee doubts that it can. The committee adds that it will take several weeks before the purification plant can restore normal operations. And so on....

Actually, no one disputes that the work at Archeres is a thankless task, in addition to having the tiring schedule of three 8-hour shifts. Also, no one became offended when the union representative exclaimed: "We don't hear such a furor when factories dispose of products which cannot be treated. Nor does anyone talk about the problems of the Acheres workers, who are so filthy when they get home that they do not dare embrace their children." No one, not even Jean Tiberi, assistant to the mayor of Paris and the men in charge of municipal workers, who says he is untiringly open to negotiation.

Nevertheless, he does not want to hear any talk about a further reduction of working hours. He agrees that the Cheres workers should qualify under the "unhealthy work environment" system, which permits retirement at age 50. However, such a decision must come from the minister of the budget, and he has just said no. Does it thus require a catastrophe to remind the social partners of public service needs? "If the Seine had been low, the major would have negotiated," commented Claude Chalon, secretary general of the CGT water union.

Perhaps, but no one agrees to having the Seine held hostage by strikers. Nothing can justify blackmail by pollution.

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Worldwide Report

ENVIRONMENTAL QUALITY

No. 356

China Addresses Environmental Issues

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 356

CHINA ADDRESSES ENVIRONMENTAL ISSUES

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INCORPORATING ENVIRONMENTAL PROTECTION INTO ECONOMIC PLANNING SUGGESTED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 5, 1981 pp 1-3

[Article by Gao Yusheng [7559 1342 5116]: "How Can We Do a Better Job of Incorporating Environmental Protection Into the National Economic Plan?"]

[Text] We have already entered the 1980's, and people's governments and cognizant departments at all levels are drafting short-term, mid-term and long-term plans for economic development to implement the four modernizations. How to do a better job of incorporating environmental protection into the national economic plan is an important issue for planners and environmental protection personnel.

In the past few years, our environmental protection work has progressed more slowly than in industrially developed western capitalist countries, which seems anomalous. Since our socialist system is superior to the capitalist system and stresses responsibility to the people, our environmental protection work should be done better. Why, then, are we behind? Some believe that this is because our environmental protection work has not been incorporated into the national economic plan and accordingly urge its incorporation into this plan so as to make it progress more rapidly. But is our environmental protection work indeed not included in the national economic plan at present? Is environmental work sure to develop faster if it is included in the economic plan? How should we incorporate it into the national economic plan? Only by clarifying these questions can we make the right prescription and solve the real problem.

1. Is Our Country's Environmental Protection Work Included in the National Economic Plan?

Socialism is the system of public ownership of the means of production, based on economic planning, and if any activity is not included in state planning, it cannot progress. Environmental protection is no exception. In this respect, we can say that inclusion of environmental protection work in national economic planning is one of the characteristics of environmental protection in a socialist country.

As everyone knows, the scope of environmental protection is very broad; according to the definition given in the "(Provisional) People's Republic of China Environmental Protection Law" promulgated in 1979, the environment includes the air, water, soil, mineral deposits, forests, grasslands, wild animals, wild plants, water life, famous antiquities, scenic spots, hot springs, baths, natural protection districts, residential areas and the like. In order to protect this environment, we must conduct environmental protection work. The specific nature of environmental protection is also specified by the state environmental protection law. For example, rational land use and soil improvement, protection of the water quality of rivers, lakes, seas and reservoirs, rational development of mineral resources; protection of forest resources, afforestation, protection against the environmental pollution and harm produced by industrial and municipal liquid, gaseous and solid wastes, dust, garbage, radioactive materials, noise, vibration and foul odors, development of clean fuels and clean energy sources, improvement of municipal sewage systems, establishment of sewage treatment areas, development of highly effective, low-toxicity agricultural pesticides, prevention of food pollution and the like are all part of environmental protection. For many years our country has included all of these activities in the national economic plan, but some were included under the name of environmental protection and others were included under other names. Starting in the 1970's, government organs and departments at all levels set up environmental protection organizations which have further strengthened environmental protection awareness and planning.

At present, China's environmental work is included in the national economic plan in three main ways. First, each year when the central government arranges its capital construction budget, it allocates special grant funds for environmental protection work, and the central government's environmental protection departments propose projects to be included in the capital construction plan. Second, when the central government organizes the budgets of the departments in the State Council and the various provinces and municipalities, these include environmental protection funds, and the various departments in the State Council and the provinces and cities propose capital construction projects for inclusion in the capital construction plans. Third, the various provinces and municipalities, departments and basic-level units set aside certain sums (including renovation for technology fund) for use in environmental protection and specify control projects to be included in the local economic development plans. For example, in 1981, the Beijing City Economic Committee's system alone allocated 18 million yuan of renovation for technology fund to be used for as grants for pollution control in enterprises, in addition to which it included economic projects in the 1981 economic development plans which it handed down. Even so, this country's environmental protection work has still been proceeding slowly in recent years.

This makes it clear that the present problem is not that environmental protection work has not yet been incorporated in national economic plans.

2. The Key to the Present Problem Is Readjustment of the Proportional Share of Environmental Protection in the Economic Plans

Since this country's environmental protection work has in fact been included in the national economic plans, why is environmental protection in this country, a socialist country, not developing as fast as in capitalist countries?

The socialist system only provides the potential for effective environmental protection; it does not make it a certainty. To make this potential a reality, government organizations, relevant departments at all levels and the basic-level units all must conscientiously intensify their environmental protection work. An important question which now requires a solution is that of suitably adjusting the proportional share of environmental protection work in the national economic plan.

In the past, we underestimated the importance of environmental protection and lacked experience in ways of protecting the environment, and in addition our country's economic development was lagging, the people's standard of living was low, and the country was rushing to step up production; as a result, in arranging the national economic plan little importance was accorded to organizing environmental protection. Just as in the past there was a loss of proportion between industry and agriculture and between light and heavy industry in national economic planning, we also had a serious loss of proportion between development of production and organization of environmental protection. Because developing production was overemphasized and environmental protection was underemphasized, a few years ago our environmental protection budget amounted to less than 1 percent of the total output value of the national economy, while in several western capitalist countries the proportion of gross national product budgeted for environmental protection in 1971-1975 was as follows: 1.6 percent in the United States, 1.3 percent in Japan, and 1.8 percent in West Germany. In absolute terms, we did even less. Although the funds allocations are not entirely comparable, generally ours are still rather low. Because our investment in environmental protection was rather small, for many years long-standing pollution problems were far from being solved and new types of pollution were increasing, so that our arrearage mounted higher and higher: this is an important reason why our country's environmental protection work has developed slowly.

The tasks currently facing environmental protection work in this country are to systematically make up the large historical pollution debt, and to actively protect against new types of pollution; these tasks are extremely arduous. Given the current organization of environmental protection work in our country's national economic plan, it will be quite impossible to make a major improvement in pollution in 3 to 5 years (the state requirement) or even in a longer period. Taking Beijing as an example, although a certain investment has been made in the past few years to deal with air pollution, the air quality still has not improved, and sulfur dioxide concentrations in the urban area during winter are still gradually increasing. According to a recent preliminary atmospheric pollution control plan, winter air quality will still not have improved in the urban area by 1985, because as economic and urban construction develop, pollutant emission by quantities will continue to expand, and the progress of pollution protection work will not be able to keep up with the rate of increase of pollution; this makes it quite clear that currently the key to our country's environmental protection work is readjustment of the proportional share of environmental protection in the national economic plan.

3. Striking an Overall Balance Through a Feasible Protection Plan

Although we need to suitably readjust the share of environmental protection in the national economic plan, on what basis should we readjust it? How large a share is suitable? Although we have made some comparisons with foreign countries, each country's situation is different, and we cannot copy their experience indiscriminately. Moreover, the requirements are not entirely comparable. In China, the periods of economic development are different, and we cannot treat them in entirely the same way; in addition the circumstances of the various localities and the various industries also differ in many respects. Primarily, we must proceed in terms of the state's financial resources and an environmental plan, and make the readjustment in terms of an overall balance.

This involves certain requirements. First, the various government organizations, departments and basic-level units must draft feasible environmental plans and hand them down, propose standards and measures and specify the funds required for specific periods. When we say, "feasible," we mean gradual improvement of environmental quality through treatment measures that are feasible in terms of our country's present financial resources and technological level; we do not mean a standstill as at present. This type of environmental protection plan cannot be limited to control of industrial pollution, but must, in accordance with the requirements of the state environmental protection law, include protection of the natural environmental, prevention of pollution and other nuisances, suitable arrangements to prevent new pollution and measures to deal with existing pollution, scientific research in environmental pollution and environmental monitoring work. Drafting this plan is not only the province of the environmental protection departments, but should be done with the participation of all relevant departments and coordinated by the environmental protection departments, then approved by the central government. In addition, the departments should draw up their own plans on the basis of the requirements stated in the environmental protection plan. Then, the various systems should present these plans to the central government's planning departments, and an overall balance should be drawn up and included in the national economic plan. Only this type of readjustment can bring the proportional share of environmental protection work into greater agreement with reality. Without such an environmental plan to provide the planning departments with data for the drafting of the national economic plan, there will be nothing but nebulous talk of incorporating environmental protection into the national economic plan, without any real significance.

4. The People's Governments and Relevant Departments at the Various Levels Must Include Environmental Protection in Economic Plans

After the governmental bodies and departments at the various levels have drawn up the environmental plans, they must submit to the State Council those parts which must be accomplished by the central government, and the State Council's planning departments must make budgetary arrangements for them in accordance with the comprehensive balance. The budgeted funds for environmental protection should be distributed as described below.

a. The proportion to be allocated to the state environmental protection departments will be primarily used for the establishment of environmental protection agencies and environmental management, grants to key units for pollution control, grants for regional pollution control, and scientific research and monitoring work related to environmental protection. The central government's environmental protection departments should distribute funds to environmental protection departments at the various levels, in accordance with their various circumstances, for specific uses proposed by the latter, which should be included in the various levels' economic development plans. Some urge that the environmental protection departments should have only an oversight role and should not control economic measures, but this is incorrect: the environmental protection departments have control over some of the budgetary funds, and it is right that they should use these for grants and subsidies for the environmental protection expenses of the localities and departments.

b. A portion of the budgeted funds should be allocated to the relevant departments in the State Council (e.g. industry, agriculture, communications, forestry, electric power and the like) for use by the organizations subordinate to these systems in environmental protection and pollution prevention; the relevant departments will propose projects to be included in the economic development plans.

c. The portion of the funds earmarked for the provinces and municipalities will be used for environmental protection work as part of municipal construction for example construction of sewage systems or sewage treatment plants and the construction of projects for the supply of clean fuels (such as coal gas plants) or other clean energy sources (geothermal, solar power and the like).

For the portions of the environmental protection plans which can be accomplished by the localities, the local people's governments and departments should set aside some funds (including local financial organs; funds and renovation for technology fund), and the relevant local departments and environmental protection departments should hold consultations and designate specific projects which will be incorporated into the local capital construction plans or technical modernization plans. In addition to receiving investment funds from the higher levels, the enterprises concerned must also allocate funds of their own for pollution control, and these must be included in the enterprises' annual, quarterly and monthly production plans along with the projects handed down from the higher levels.

Only by following such a procedure will the requirements of the state economic plan and the environmental protection plan be closely coordinated.

5. Environmental Protection Projects in the State Plan Should Be Treated as Indicators for Economic Review

Inclusion of environmental protection projects in the national economic plan is just the beginning: organizational measures are even more important. This work has not been done well in the past. It generally happens that in the process of implementing plans, certain departments and units have had insufficient manpower and material resources, and accordingly they have only followed the production assignments and have ignored the environmental protection assignments. This is because the production assignments included review indicators, and if they were not accomplished the organizations would be subject to economic or administrative sanctions, while failure to accomplish the environmental protection assignments entailed no such sanctions. Although this situation has been somewhat improved in recent years, the problem still exists. In order to assure that planning assignments for environmental protection are actually carried out, they must have the force of law just as the production plan does, and accomplishment of environmental protection plans should be part of the state review of the localities, departments and units. Those who have accomplished them well should be rewarded, and those who have not should be subject to economic or administrative measures. The economic departments and People's Government at all levels should review not only production but environmental protection work, and any problems discovered should be quickly solved. The basic-level units should make their environmental protection tasks into targets serving for review of their shops and shifts. Only in this way will it be possible to make environmental protection develop steadily and soundly as the national economy develops.

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RELATIONSHIP BETWEEN ENVIRONMENTAL PROTECTION, ENTERPRISE RENOVATION DISCUSSED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 1, 1982
pp 1-2, 21

[Article by Sun Jiamian [1327 0857 4875]: "Environmental Protection Must Be Closely Coordinated With Enterprise Technical Renovation"]

[Text] An effort in enterprise technical renovation and equipment modernization aimed at saving energy, improving product quality, decreasing materials consumption and increasing the number of varieties and colors is proceeding in planned, systematic fashion in a multitude of enterprises throughout the country. This is extremely beneficial to environmental protection work in industrial and communications enterprises. The environmental protection departments and the enterprises and their cognizant departments must implement the spirit of the Fourth Session of the Fifth National People's Congress, carry out the relevant directives of the party Central Committee and the State Council regarding environmental protection, act in close coordination and cooperation, and use the technical renovation and equipment modernization of industry to raise environmental protection work to a new level.

1. In recent years our country's environmental management work has been greatly strengthened, and environmental protection work has achieved good results. There has been some mitigation of environmental pollution in cities such as Lanzhou and Shenyang, water quality has improved somewhat in such water bodies as the Bohai, the Yellow Sea, the Guanting Reservoir, and West Lake in Hangzhou, and the quantities of such toxic or harmful substances as phenol, cyanide, chromium, cadmium, mercury and arsenic in some industrial and mining areas have decreased considerably. According to incomplete statistics, the quantity of waste discharged per 10,000 yuan of gross industrial output decreased by 8 percent from 1979 to 1980, the average wastewater treatment rate for 1980 was 8.2 percent, and the solid waste recovery rate reached 19.6 percent.

But because the principle of the "three simultaneous activities" in new construction projects has not been well implemented, because older enterprises have been making slow progress in pollution control, because enterprise productive capacity has been expanding continuously, and because neighborhood and commune industries have been developing rapidly, there has been a continuing increase in new pollution sources, and pollution is spreading and becoming more serious. In 1980 the total amount of wastewater discharged nationwide increased by 9.7 percent from the 1979 level, a rate of increase which was faster than the 8.7 percent growth of industrial output. The quantity of wastewater discharged annually which did not meet discharge standards reached 26 billion tons. There has been strong public reaction to the negative effects of pollution, and disputes between industry and agriculture over pollution are increasing in number. Many cities' drinking water supplies are seriously polluted, subsurface water tables are falling to a considerable degree, and in a few localities there has been serious surface subsidence. Extensive areas are drought-stricken or short on water and also suffer pollution, resulting in a water resource crisis. Environmental pollution has become a major problem of our economic and social development.

2. Solving our environmental pollution problems, particularly those of industrial enterprises located in densely populated urban areas, drinking water protection areas, and cultural, historical, scenic and tourist areas, must be closely linked with technical renovation and equipment modernization.

First, the pollution problem is objectively determined by social progress, economic development and industrial expansion. On the one hand, many countries are treating the problems of environment, population, resources and development in integrated fashion and studying the relationship between development and the ability of resources to support it; on the other hand, taking effective steps to stop the destructive development of resources and their shockingly wasteful utilization requires that people make use of advanced science and technology and carry on efficient industrial equipment, increase the utilization rate of resources and create more wealth and a more suitable living environment for man. Accordingly, the efficiency and optimality of resource and energy utilization and the quality of the environment have become important standards for determining the level of a country's economic development and its ability to remake and utilize nature.

It is impossible for industrial production to make complete use of resources and energy without producing any waste, but the use of advanced scientific and technical methods to gradually raise resource use efficiency both can and should be achieved. The fact that increasing the resource utilization rate, elimination of environmental pollution, technical renovation and equipment modernization are mutually supporting, mutually limiting components in the organic unity of the national economy stems from the inevitable course of economic development.

Second, environmental pollution is actually waste of resources. The wastes discharged during industrial production result from incomplete utilization of materials and energy during the production process. We know that every year the country's key nonferrous metals enterprises discharge 170,000 tons of dust containing copper, lead, cadmium, mercury and arsenic and the like and 500,000 tons of concentrated sulfur dioxide into the environment annually and that 49 large and medium-sized cement plants nationwide discharge 1.5 million tons of cement dust a year over and above the 1 million tons which is recovered. If the metallurgical enterprises could recover and utilize 50 to 60 percent of this waste and the cement plants could recover a million tons of the dust, what a quantity of material and energy they would save, and what an economic and environmental result they would produce! In addition, the Northeast, North China and East China have serious energy shortages. If a certain area which has 52 power plants with a total of 1.93 million kW of installed capacity and an annual coal consumption of 9.69 million tons were to replace obsolete equipment with large high-temperature high-pressure generating units, while using the same amount of coal its capacity could reach 3.17 million kW and its electrical output would increase by 64 percent; how much energy this would save the country, and what a decrease in smoke, flyash and sulfur dioxide pollution it would produce compared with the construction of 1.24 million kW worth of new power station capacity! There are many more examples of this type of waste and pollution.

Third, since pollution occurs during the production process, pollution prevention should also be carried on during the production process. The reason that many enterprises have low resource utilization rates and serious pollution, other than management-related causes, is directly connected with obsolete technologies, outmoded process equipment and inadequate facilities. Accordingly controlling industrial pollution must be connected with the technical renovation and equipment modernization of all enterprise production stages if it is to be truly effective.

The Shenyang Metallurgical Plant's great production advances and outstanding pollution control achievements associated with technical renovation are a laudable example. This plant is more than 40 years old, its equipment was obsolete and its processes outmoded, and it produced serious pollution and great harm, but it carried out technical renovation and solved its problems by treating the expansion of production, efficient resource utilization and the pollution problem as a unified whole. After 3 years' effort it succeeded in recovering large quantities of pollutants that would have been discharged into the atmosphere; it now recovers 113,000 tons of sulfuric acid and 1,000 tons of metals such as copper, lead, cadmium and mercury and saves 66 million tons of water, 11,000 tons of coal and large quantities of other materials each year. Its actions caused a marked decrease in the quantities of sulfur dioxide and metal dust in the air of Shenyang City and a considerable decrease in the quantities of heavy metals in wastewater and of toxic substances in solid waste, while in the past 3 years the plant's average gross output value has increased by 7 percent a year and its profits by an average of 30 percent a year. Thus it has achieved outstanding economic, social, labor protection and environmental results. Industrial production is booming and the entire populace of the city and all of its employees are happy.

Fourth, controlling industrial pollution and protecting the environment are a prerequisite for building an advanced social-material and spiritual culture. We are a socialist country, and our aim in production is to satisfy the increasing material and cultural needs of the broad masses of the people while improving their living environment and level of health.

This requires that enterprises use modern scientific and technical methods and do everything possible to adopt new processes and new equipment. In addition they must give due attention to inexpensive, effective small improvements, improve resource utilization rates, protect against pollution, and gradually achieve plants which produce no harmful substances and are clean and well run. The question of whether an enterprise (particularly an urban enterprise) can improve its environmental protection work in the course of this technical renovation will determine whether it can achieve maximum economic results, whether it can remain in production for a long period, and whether it can carry out production modernization.

3. In technical renovation and equipment modernization, the key to effective industrial pollution prevention and control is strong leadership, adequate understanding and appreciation of the problem, and the taking of effective steps.

First, there must be practicable general and specific plans. In the general plan for technical renovation and equipment modernization, the environmental protection departments and the enterprise and its cognizant departments must specify each unit's overall orientation and specific tasks in pollution control. Because pollution is a serious problem whose treatment has been long deferred and because financial and material capabilities are limited, it cannot be solved in a short period; following thorough investigation and substantiation, priorities must be assigned and the tasks carried out stage by stage. The emphasis should be laid on urban industrial centers and key enterprises, and problems which involve large-scale waste of resources and energy, serious pollution and sharp conflicts with surrounding inhabitants or the peasants should be scheduled for solution first. Because technical renovation and equipment modernization are a long-term undertaking, the environmental protection departments must treat them as an important, continuing activity, must give overall consideration to pollution control work in their areas or departments, and must include their completed general plan and specific requirements in the plans issued by planning departments and other relevant departments.

Second, environmental protection management work must be strengthened, and various measures, including economic, legal, administrative and propaganda and education measures, must be adopted in order to promote pollution control work as part of technical renovation. Pollution fines should be levied against units which have pollutant discharges in excess of state standards, and effective awards should be instituted for products which make comprehensive use of wastes. Enterprise environmental management must be combined with production and technical management, and various types of environmental management systems, pollution control targets and systems of rewards and penalties based primarily on the responsibility system must be developed and made to function effectively. Effective operation and management of existing environmental equipment and improvement of its completeness, operating time, treatment effectiveness and availability will assure that pollutant discharges meet plan requirements.

Third, all enterprise potential must be utilized and the necessary funds must be raised. Saving energy and raw and other materials, improving product breakdowns, making rational use of resources and improving enterprise economic results are the main objectives of technical renovation, and they imply control of pollution. In cases where such projects are hard to separate from other, some units practice unified planning and utilization of the funds they can mobilize, achieving rather good economic results; in other cases environmental protection projects can be handled as separate entities. In present-day circumstances there are numerous funds channels; these include modernization and renovation funds under enterprise control, profits retained by enterprises which form part of the enterprise production fund, profits retained according to regulations for comprehensive utilization of wastes, returned portions of pollution fines and the like. In addition, larger projects can be treated as capital construction projects, projects involving renovation of inefficient processes can be treated as technical projects, some equipment alterations can be dealt with in connection with major overhauls, and in cases where comprehensive utilization will increase profits and there is the capability for repayment, small loans may be sought from banks.

Fourth, leadership must be intensified and the spirit of the relevant State Council documents must be completely implemented. Environmental protection is highly interrelated with a wide range of other activities. The environmental protection departments must work in close coordination with various other departments and entities, strengthen their cooperation, approach pollution control and economic development as being aspects of the same undertaking, and think in overall terms; they must aid pollution control units, furnish technical information, promote pollution-free or low-pollution industrial equipment and processes, and help with monitoring; and they must summarize, exchange experience and disseminate and propagandize good experience with comprehensive utilization and pollution control obtained in the process of technical renovation. They must monitor progress at regular intervals, make timely reports to higher-level offices, take it upon themselves to secure party and government leadership and support, stir up an energetic spirit, and take realistic steps to assure that environmental protection work in 1982 will achieve even greater results.

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ECONOMIC ASPECTS OF ENVIRONMENTAL PROBLEMS DISCUSSED

Changchun JILIN DAXUE [JILIN UNIVERSITY JOURNAL] in Chinese No 2, 1982 pp 20-27

[Article by Du Xianren [2659 2009 0088]: "Economic Investigation of Environmental Problems"]

[Text] The natural environment is the space in which man exists. We may say that the environment is a condition for human production and creation and that man is able to develop through changes in the environment. Every stage, from that of cave dwellers and nomads to today's modern production and culture, reflects man's progress in adapting to, utilizing and remaking the environment. Although nature is independent of and external to human society and has its own physical cycles and laws of energy conversion, once human social and economic activity become involved in the material movement of nature, environmental questions cease to be simply questions of such natural sciences of environmental chemistry, environmental biology and environmental geoscience, and become questions of social economics as well; economics has begun to enter environmental science.

This paper attempts to elucidate the interrelationship between environment and economics in terms of society's dependence on the environment, the effects of social reproduction on the environment, and economic questions of environmental protection.

A. Human Society's Dependence on the Environment

1. The Environment Is the Space in Which Man Lives

Environmental questions have existed as long as man has. We know that long before man appeared the environment had undergone a long development, but before man existed there were no such thing as environmental problems. The term "environment" refers to the objective conditions for some central thing. The center of the natural environment should be man, because man is the master of the natural environment and the natural environment is the space in which man lives.

Nature is spatially unlimited, but the natural environment which is suited to man's existence is limited. Thus far, man and other living things have lived primarily on the surface of the earth. We generally refer to the surface of the earth which is suitable for the existence of man and other living things as the "biosphere." The biosphere as it is currently recognizable lies generally between the limits of 11 kilometers below sea level (the deepest part of the Pacific Ocean) and 90 kilometers above sea level (the troposphere and part of the stratosphere). The environment within these limits forms the main arena of vital activity and the space in which man exists.

The biosphere consists of the atmosphere, water, rock, soil and all things which live in them. The natural environment is the sum total of all of these factors surrounding man.

The atmosphere consists of oxygen, nitrogen, rare gases and the ozone of the upper atmosphere, with an admixture of water vapor and carbon dioxide. The oxygen and nitrogen which it contains are elements essential for life. This atmosphere, which has evolved over many eons, is important for the respiration of living things.

It not only provides elements essential to man, but also protects living things on the earth against harm from various types of rays from outer space, protects water vapor on the surface of the earth from being lost, and regulates temperatures. Accordingly the atmosphere is an essential environment for the existence of man and all living things.

Water accounts for about 70 percent of the surface of the earth. Water evaporates from the surface of the earth into the atmosphere, condenses as rain or snow and falls back to earth, thus forming the hydrologic cycle in nature and providing the water needed by living things. Water is essential to living things; 70 percent of the weight of the human body and 83 percent of blood is water. Moreover, the transport of nutrients in living things, the elimination of metabolic wastes and the heat balance of the body all depend on water. An adult human needs at least 3 liters of water a day. If the human body is deficient in water by an amount equivalent to 20 percent of the body weight, life is endangered. Clearly water is an essential environmental factor for man and other living things.

Rock and soil are the base on which living things grow. Surface rocks have produced soil through long weathering, erosion and biological activity. Other than hydrogen, oxygen, nitrogen and carbon, which can also be obtained from air and water, the chemical substances on which life is based all come from rocks and the soil. Soil is the medium in which plants grow; plants absorb minerals and water from it, grow using sunlight for photosynthesis, and provide abundant food for man and other animals. Obviously, soil is also an environmental factor essential to life.

To summarize, living things can only live in an environment with sunlight, air, water and soil, so that these form the natural basis for the life of man and all other living things. When we say that the natural environment is the space in which man lives, this is first of all because the natural environment is the area from which man obtains his basic vital materials.

2. The Natural Environment Is an Essential Condition for Social Material Production

The natural environment not only is the area from which man obtains his basic life materials, but a constant natural condition for human society's material production. The natural environment consists of matter, and accordingly, as natural resources, it forms an essential material factor for social production. Natural resources can be divided into three categories:

a. Ecological resources such as sunlight, air and water. In ancient times these miraculous things were considered the basis of all living things; they are inexhaustible resources which man can use freely and are called "permanent resources."

b. Biological resources such as forests, grasslands, aquatic life, birds, animals, microorganisms and soil. These resources can renew themselves, and if suitably used and more effectively nurtured they can be made inexhaustible; accordingly they are called "renewable resources."

c. Mineral resources such as coal, oil, minerals and the like. These resources were formed over eons of geological development and are limited in quantity, so that they are "nonrenewable resources."

The natural resources described above form the basis of man's existence and material production and are constant, eternal necessities for the productive activity of human society.

The utilization of natural resources is not permanently fixed. As the level of the productive forces rises and man's ability to utilize and remake nature is strengthened, the content of use of natural resources will expand continually. While in the initial period of human society people derived finished material resources directly from the natural environment to a greater degree, as science and technology develop, people will be increasingly able to utilize natural resources that were formerly unusable or essentially unknown. Sunlight was originally the medium with which plants carried out photosynthesis, but now it has become the most promising energy resource for production. People often conceive of bacteria as harmful, but they can help people in industrial production and can be used in metal beneficiation and pharmaceutical production. In other words, as man gains a deeper knowledge of nature, he develops new materials and produces a myriad of composite and synthetic materials, but all of this stems from the material environment. The dependence of human social production and economic activity on the natural environment will never end.

Social production's dependence on the environment is not abstract; the natural environment is a specific geographical environment. On this planet of ours, natural environments differ in thousands of ways and have distinct regional characteristics. Even within a small land area, soil conditions, hydrogeology and mineral distribution may vary greatly. It goes without saying that geographical environment has a great influence on the economic development of a country or region.

First, nature like labor, is a source of utility value, because material wealth ultimately consists of utility value. In economic terms, natural wealth can be divided into two categories: means of livelihood such as the fertility of the soil and the abundant fish in the waters, and means of labor such as water power, forests, metals, petroleum and the like. In general, in the initial period of human culture, the means of livelihood had a major effect on social and economic development, when man had developed to a relatively high level, the means of labor came to have an increasingly greater effect. Particularly under current world conditions, the rapid growth of production and consumption have already made some resources into scarce strategic materials. Possessing abundant natural resources may bring immense social wealth to a country. For example, the Organization of Petroleum Exporting Countries [OPEC] is now fully aware of world demand for its scarce product, and accordingly the prices which it sets for petroleum may be more than 10 times its production cost.

Second, the geographical environment may affect the distribution and development of production sectors. Agriculture may develop faster on fertile land, while livestock raising can only flourish on land suited for grazing; without minerals and fuel resources it is difficult to establish extractive industries. We frequently speak of developing production "in accordance with local conditions"; this means primarily setting objectives which are suited to differences in natural environments. The objective in development of social production is correct handling of the interrelationship between three factors requirements, capabilities (technical and financial) and resources. Natural resources will always be the starting point and precondition for our long-term development plans.

Third, the geographical environment can hinder or aid our production of material goods. This is because the natural conditions for labor differ and can cause different economic results to be achieved from investments of the same size. For example, because ores are of different quality, deposits occur at different depths and transport distances differ, supplementary investments in mine development and production costs differ considerably. To be sure, man can remake the natural environment and a country can use indirect methods to obtain natural resources (such as importing raw materials). But a well-endowed geographical environment has a great effect on social and economic development.

Economic Analysis of Social Production's Effect on the Environment

Society's economic activity begins with production. So long as there is human productive activity, there will be interchange of matter between man and the environment and consumption of environmental resources, and the natural environment will be affected and remade concurrently with productive activity.

a. The Process of Interchange of Matter Between Man and the Environment

As we said above, we use the term "environment" with reference to man, because it implies the relationship between man and nature. For man, the environment is the material world which interchanges matter with him and with human society.

We may say that in the final analysis the relationship between man and nature is one of interchange of matter.

Matter interchange between man and the natural environment is different from interchange of social products. Modern-day exchange of social products is based on commodity production. Commodities are things which on one hand have utility value and can satisfy people's needs, while on the other hand they have exchange value and can be exchanged for other goods. In the exchange process, commodities are transferred from holders for whom they lack utility value to those for whom they do have utility value in accordance with the principle of equal value.

But in the case of material interchange between society and the environment, on the one hand all materials which social production and daily life require are obtained from the environment, while on the other hand all waste materials from production and daily life are returned to the environment, forming the process of interchange of matter between man and nature.

Thus the characteristics of matter interchange between man and the natural environment are that environmental resources have utility value and accordingly are exchanged with man, while "products" which can be exchanged for them by man are generally wastes which harm the environment. If we call man's exploitation and utilization of the environmental resources "positive exchange" of environmental material, then the discharge of waste products into the environment following consumption by human social production and daily life can be called "negative exchange." Obviously without the first type of exchange the second is impossible. This is because matter is conservative and, with the exception of atomic decay, all atoms which enter the human economic system will be discharged by it in different combinations. Thus this cyclic character in material interchange between mankind and nature results in an interconnection between the economic reproduction process in human society and energy interchange and the material cycles in nature. Once there is material interchange between man and nature, man unavoidably has an effect on the natural environment.

Another characteristic of matter interchange between man and nature is that environmental resources are natural products, not products of human labor: they have utility value but not [intrinsic] value. Thus material exchange between man and the environment is not commodity value interchange, and accordingly it cannot have guardians and protectors as in the case of commodities. Instead, it consists of man's uncompensated taking from the natural world. The environment is both a natural treasurehouse from which man may take at will and a garbage heap into which he may discard what he wishes: man can take possession of it, plunder it and damage it. But nature's patience is limited; when the exchange of matter between mankind and nature harms the normal balance of the ecology, nature will retaliate against man. Engels cited the following examples. We should not be excessively self-congratulatory over our conquests of nature. For each such conquest nature repays us. In order to obtain farmland, the inhabitants of Mesopotamia, Greece, Asia Minor and other lands cut down the forests, but they did not dream that these places would today be barren wastelands and that when they stripped the land of its forests it lost the factor that was critical for accumulating and storing moisture. The Italians cut down on the southern slopes of the Alps the pine forests which were carefully protected on the northern slopes without realizing that they were destroying the basis for their high-pasture livestock raising; even less did they realize that this would cause the springs to dry up for a large part of the year and that during the rainy seasons even fiercer torrents would pour down to the plains. These examples make it clear that this retaliatory aspect of nature usually results precisely because man has abused the environment rather than protecting it.

The above analysis makes it clear that the interchange of matter between man and the environment affects the environment in two ways. On one hand, all of the material which man needs is taken from the environment, while on the other all wastes produced by human society's economic activity are returned to the environment: this is the most basic material relationship between man and the natural environment. But matter exchange between man and the environment also must conform to the laws of the natural environment's matter cycle and energy flow, and accordingly man does not stand outside nature. Man is not primarily social man but natural man; even our bodies belong to nature and exist in nature. Any harm which man does to the environment is unquestionably harmful to mankind.

b. Consumption of Environmental Resources

In analyzing the exchange of matter between man and the environment, we have left aside the question of consumption of natural resources. In reality the exchange of matter between man and nature is possible only through the process of consumption of environmental resources by human society. This is because the basic aims of matter exchange between man and the environment are production and consumption, and only through productive consumption and consumption in daily life can society's waste products be returned to the environment, producing interchange of matter between man and the environment.

In this context, the material relationship between man and the environment is that man takes in material resources from nature, passes them through the social production and consumption system and discharges waste products, returning them to nature. Thus social production and consumption are the intermediaries in matter interchange between man and nature and are the origin of environmental problems. While consumption exists there will be a process of matter interchange between man and society, and environmental problems will arise.

But before the advent of large-scale mechanical industry, because the productive forces were not highly developed, society's ability to influence the environment was very limited. It was only when science and technology progressed, society and economics developed and the human population burgeoned, resulting in a sharp increase in consumption, that environmental problems became major social problems attracting serious concern.

We said before that nature was an inexhaustible treasurehouse from which man could take, but now the amount of things that man can take at will is steadily decreasing, and only sunlight and air are still free for the taking--and in some locations air pollution is threatening health.

The world has extremely plentiful fresh water resources, but water shortages are developing in many cities. In particular, the water requirements of certain cities with large concentrations of industry and population already exceed the limits of natural resources, subsurface water is exhausted, resulting in surface subsidence, and the water is becoming polluted, which is gravely affecting the inhabitants' lives and the expansion of production.

Forests and grasslands are essentially renewable resources. But because of extensive cutting of forests for wood, the conversion of forests and grasslands to farmlands, and overgrazing, the percentage of plant cover in them is decreasing, which has disrupted the ecological balance, in some places producing soil erosion, alteration of climate, and desertification and salinization of grasslands, so that renewable resource lands become denuded hills which cannot be restored naturally.

Nature's mineral resources are also extremely plentiful. But man has consumed and wasted them in a shocking manner. Consider fuel resources, for example; world consumption of petroleum and natural gas doubles every 9 years, so that petroleum has already become a scarce resource. Waste of minerals manifests itself in loss of resources: it is estimated that of currently developed world mineral resources, as much as 50 percent is wasted, producing large quantities of solid, liquid and gaseous waste and seriously polluting the environment.

All of the above makes it clear that pollution of the environment and disruption of the ecological balance result from a high level of industrial and agricultural development and from a rapid increase in consumption. In specific terms, environmental questions develop into the following four main kinds of social harm.

1. Environmental harm produced when highly developed industry and agriculture consume large amounts of resources and the wastes which they produce (solid, liquid and gaseous) are discharged at will, causing environmental harm. According to some estimates, worldwide wastes include discharge of 3 billion tons of solid waste, 500 cubic kilometers of liquid waste and 600 million tons of gaseous waste.

2. Environmental harm caused by high concentrations of population, increased amounts of living wastes, and failure to utilize or treat these wastes, which are discharged at will into the environment. Examples are pollutants such as trash, wastewater and motor vehicle emissions.

3. Environmental harm produced when development and use of resources exceeds resource renewability. Examples are excess withdrawal of subsurface water, wanton cutting of forests, uncontrolled taking of wild animals, excess taking of aquatic products, intensified use of soil and grasslands, irrational large-scale hydraulic engineering projects, reclamation of land from lakes, opening up of grasslands to cultivation and the like, all of which disrupt the ecological balance and damage natural resources.

4. Environmental harm caused by irrational geographical distribution of production so that pollutants discharged into the environment are overconcentrated and exceed the environment's natural self-purification capabilities.

The analysis above treats two ideas. One is that as soon as production and consumption by human society exist, there is exchange of matter between man and nature and environmental problems arise. The second is that under current scientific and technical conditions environmental pollution and damage can be limited and possibly prevented, and that provided we use natural laws correctly and effectively strengthen environmental protection, man can become the true master of the natural world.

c. The Social Production Process and Alteration of the Environment

We begin by investigating the social production process as a process by which man produces material goods in general.

The process of producing society's material goods is a labor process by which man changes the material form of nature through purposeful activity so that it can satisfy certain needs of his. If any society ceases production of material goods, the people will be unable to continue living and will die within a short time. Accordingly, production of material goods is the foundation of human social life and of society's existence and development.

We now consider man's production process as a process of conquering nature and changing his living environment.

The process of man's production of material goods is also a process in which he utilizes and purposefully alters nature. Unlike animals, which can influence nature only by their existence and adapt their bodies to nature, man primarily uses his labor to alter the environment and change it into a new living environment. The environment in which man lives today has long since ceased to be a simple natural environment; it is an environment reworked by man.

The purpose of production of material goods is to satisfy man's requirements for utility value, of course including the reworked natural environment. But its utility value as a product is distinct from its utility value as a natural environment. For example, a motor vehicle can be bought as a commodity, but if a location lacks roads to drive on and an automobile that one possesses cannot be used, an environmental problem arises. Accordingly, as environmental material, roads satisfy people's needs in a different utility-value form. Again, if a reservoir is built, it can serve as an environmental rsource and can be used for irrigation or for raising aquatic products, while at the same time it is also a material environment for daily life and is used to regulate the climate and as a scenic attraction. Furthermore, in addition to satisfying people's spiritual and cultural needs, parks and historic landmarks are also economic products which increase tourist income. Thus the content of the manmade material environment is also extremely rich, and it has a multitude of uses.

Above we said that the process by which mankind produces material goods is also a process in which man purposefully modifies the environment. It is a pity that as social production develops, production waste discharges increase rapidly, so that conversely, the process of man's production of material goods also becomes a process of continual degradation of the environment. Many environmental problems not only produce serious harm for present-day man, but may also have far-reaching consequences for future generations. On the one hand, man's social production improves his living environment, while on the other it also degrades it; this dual effect on the environment reflects both the results of the development of human production and of scientific and technology and the results of their failure to develop. The fact that "progress brings about harm" has non-progress implicit in it has compelled man to reach a new understanding of his social production problems, which has led to the birth of environmental science as an integrated scientific discipline.

To summarize, social production has a major effect on the natural environment. On one hand, man continually improves his living environment, while on the other, he degrades it; this is the law of union of opposites with regard to development of social production and of environmental problems. This is in fact a major problem which inevitably arises in the modernization process and which must be suitably solved.

Economic Problems of Environmental Protection

a. Should Protecting the Environment, Improving the Environment and Creating an Excellent, Suitable Environment Be an Objective of Socialist Economic Development?

The basic economic laws of socialism embody the fact that social production is intended to satisfy people's continually increasing material and cultural needs. What are people's material needs? Everyone will easily recall the basic necessities of life, i.e. food and clothing; but people generally forget that above all, man and animals cannot be parted from the four basic environmental factors of sun, air, water and soil. As a natural man, in addition to obtaining his food every day, man also needs to drink about 3 liters of water and to breathe about 10,000 liters of air: these are essential materials for life. If there were no environmental pollution and no disruption of the ecological balance, man could enjoy the natural products air and water to his heart's content. But he now must expend labor to make the air fresh and to purify polluted water. Accordingly, protecting his living environment has already become part of production activity and an objective of economic development.

As society and the economy develop and man's basic needs of food and clothing are satisfied to a certain extent, his need to improve his living environment becomes even more pressing. We frequently hear people who are eager to improve their living environment, who complain about dusty roads in fair weather and muddy roads in wet weather, and who hate dusty, foul-smelling working environments; all of these attitudes reflect man's need to improve his environment. We frequently say that it is hard to obtain food, housing, clothing and transportaton in the cities: In addition to production factors, these problems are also due in large part to the facilities of the urban environment, for example, housing facilities, transportation facilities, health facilities, cultural facilities, work facilities and parks and green areas. The so-called man-made urban environment consists primarily of these nonproductive facilities. Accordingly, to continually increase investments in urban public services and build an excellent, suitable environment naturally should be a goal of socialist economic development.

2. Is "Pollution First, Treatment Afterward" the Universal Law of All Social and Economic Development?

Since the revolution in production, modern industry and communications have developed rapidly. In some developed capitalist countries, environmental pollution has long been a social menace. It was only the world-shaking occurrence of the London fog incident and the three major pollution diseases in Japan (respiratory disease, "bone-ache disease" and Minamata disease) in the 1950's that stimulated the struggle against environmental pollution by the people of all countries. Against this social and historical background, in the 1960's governments set up environmental protection organizations one after another, issued environmental protection laws, increased investments in pollution control and set up special environmental protection research organizations. After 20 years' active effort in dealing with the problem, environmental protection has achieved outstanding results in some countries. This is the route of "pollution first, treatment afterwards" that some countries have taken.

The situation of "pollution first, treatment afterwards" is actually a product of the capitalist system. Capitalist production, which seeks maximum profits, naturally cannot concern itself with the public interests of the masses. Without the struggle of the masses, without the coercive force of society, the capitalists would not willingly engage in pollution prevention. "Pollution first, treatment afterwards," which is a reflection of the intrinsic characteristics of the capitalist economic system, is a logical, inevitable law.

The socialist economic system is based on public ownership of the means of production, and all of its productive activity is carried out in the public interest and in the interests of the people. The environmental protection policy of "protect the environment and create benefits for the people" laid down by the party and state is a concrete embodiment of the principle of "everything for the people" and reflects the superiority of the socialist economic system.

But the superiority of the socialist economic system is not realized automatically. Thirty years' experience shows that in the past our several hundred thousand industrial and communications enterprises failed to carry out environmental protection measures, so that our country's environmental problems became extremely pressing. This situation had many causes, such as inadequate understanding, technical and economic conditions, and in particular the interference and sabotage of the "gang of four." But the basic reason was that the guiding ideology of "production for production's sake" persisted for a long period in our economic work.

When the focus of the whole party's work shifted to socialist modernization the national economy began to carry out readjustment, reform, reorganization, and upgrading, and in 1979 the first "(Provisional) People's Republic of China Environmental Protection Law" was issued. This marked a new historical stage in our country's environmental protection work.

Many instances, domestic and foreign, demonstrate that producing pollution is easy and dealing with it is difficult. Once the environment is polluted, even if new pollution is stopped, a long period is required in order to eliminate the old pollution, and it may be very difficult to restore the initial situation. It is worth particular notice that environmental pollution may even produce secondary pollution. For example, because hydrocarbons and their compounds discharged into the atmosphere undergo photochemical reactions under the influence of sunlight and produce many strong oxidizers, primarily ozone, secondary atmospheric pollution has arisen. Secondary pollution may also result from water pollution. The Minamata disease which attracted worldwide attention was a grave instance of the conversion of inorganic mercury into highly poisonous methylmercury.

To summarize, our back debt in environmental pollution must be paid up, and the longer we delay, the greater the cost that must be paid. At the beginning of the four modernizations, we must devote attention to producing no more pollution or at least to minimizing new pollution and must strive to achieve outstanding results in environmental protection is not too long a period.

c. The Effect of Environmental Protection Investment on Economic Development

In order to assure that we achieve environmental standards suited to human life and avoid disruption of the natural ecological balance, we must make new additional investments in productive construction and handle these expenditures as enterprise production expenditures, which will have a major effect on economic development.

First, the costs of environmental protection equipment are major expenditures. In Japan, for example, pollution control equipment investments in large and medium-size enterprises in 1970 accounted for 5.8 percent of total corporate investment, while in 1975 the figure had increased to 17.7 percent. In 1976 several major branches of industry devoted the following proportion of total investments to pollution control facilities: 20.6 percent in the iron and steel industry, 18.4 percent in the petroleum industry, 43.8 percent in the fossil-fired electric power industry, 17.5 percent in the paper industry, and 18.5 percent in the chemical industry.

In this country, because most enterprises built in the past took no steps for control of pollutants, we incurred a great back debt. It is estimated that the adoption of environmental protection measures in over 1,000 large and medium-size enterprises which are serious polluters will cost about 30 billion yuan. According to Shanghai City's preliminary plan, pollution control expenditures will be 4 to 5 billion yuan. It will be difficult for the country to lay out such a sum in a short period, and our only recourse is gradually to increase our environmental protection investments as the economy develops.

Second, environmental protection investments generally do not constitute productive forces, so that the rate of economic growth is likely to be affected for a rather long period. Although investments in environmental protection equipment may lead to development of the environmental protection equipment industry and promote the improvement of environmental technology, experience makes it clear that large environmental protection expenditures will still constrain economic growth.

Third, environmental protection investments are certain to increase enterprise investment costs, raise production costs and depress enterprise profits, or even lead to rising commodity prices.

Environmental protection costs will unquestionably affect the rate of social and economic development. The problem is that the rate of economic growth is not our fundamental objective: the objective of production is to satisfy social needs. The speed which require is that which assures satisfaction of the people's needs. At the same time, we must also be aware that preventing environmental pollution may also yield benefits for the economy. For example, treating smokestack emissions may decrease agricultural crop losses; treating water pollution can protect the development of aquatic life, and, even more importantly, will decrease disease in humans and relieve people's spiritual suffering, which will have major long-term effects on economic development.

4. The Relationship Between Enterprise Economic Effectiveness and Social Economic Ineffectiveness in Environmental Problems

Economic effectiveness is a synonym for economic results. Any economic activity involves the question of cost versus gain, i.e. economic results. The economic result of production consists of the relationship between the labor and means of production expended and the social product obtained. In simple terms, it is the relationship between expenditure and usefulness.

There are many indicators of the economic results of enterprise production, such as output volume, output value production cost, funds, profit and the like. If an enterprise has large output volume, low production cost and high profits, we say that its economic effectiveness is good; otherwise we say its economic effectiveness is poor.

The main key to enterprise economic effectiveness is whether the usefulness obtained from the product recompenses production outlays; it generally takes no account of the economic effectiveness of the national economy. This emerges particularly clearly in the matters of development and use of environmental resources and environmental pollution.

For example, in mineral extraction, it is generally desired to extract the rich ore or relatively easily exploited minerals in a given district and to discard low-grade or hard-to-extract ore. Using methods which waste natural resources increases enterprise economic results. From the enterprise's point of view it is economically effective, but from the point of view of society it is economically ineffective.

Again, a factory in Guilin completes its production plan every year and pays large amounts of profits to the higher levels; but because it has no pollution control, it has polluted the Li Jiang. In terms of enterprise economic effectiveness this is a good plant, but in overall terms it is economically ineffective for society. When a plant ruins a river its merits cannot outweigh its faults. Who knows what it costs to cure the pollution of a river?

Thus our economic workers must look at matters not only in terms of developing production, but also in terms of protecting our natural resources and protecting the ecology. They must consider not only an enterprise's economic effectiveness, but the economic results of production activity for all of society.

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ECONOMIC, ENVIRONMENTAL IMPACT OF RESERVOIRS ON RIVER SYSTEMS

Beijing SHUILI SHUIDIAN JISHU [WATER CONSERVATION AND HYDROELECTRIC POWER TECHNOLOGY] in Chinese, No 3, 20 Mar 82, pp 55-59

[Article by Zhang Chun [1728 4783] of the Beijing Surveying and Design Academy of the Ministry of Water Conservancy: "The Impact of Reservoirs on the Environment"]

[Text] Since Liberaton, China has built more than 86,000 large, medium and small reservoirs, including more than 2,600 large and medium ones. These reservoirs serve flood prevention, irrigation, generation of electricity, navigation, fish culture and supply water to cities and industries. But some reservoirs have also brought about an unfavorable impact on the environment. This has gradually been recognized and emphasized and measures have been taken for some of the reservoirs, where the unfavorable impact has been eliminated or reduced, but some problems still have not been recognized. As water conservancy workers, we must clearly understand the impact that reservoirs have on the environment in planning, designing, using and managing reservoirs. We must see the beneficial side of reservoirs and we must also see the unfavorable impact on the balance of nature brought about by the building of reservoirs. The experience of building water conservancy projects has made us realize that they should be economically rational and technically advanced, and environmental problems must also be considered. The beneficial impact of a reservoir on the environment is described in detail in the plans and designs of that reservoir. But to better consider environmental problems of reservoirs, this article will emphasize the unfavorable impact of reservoirs on the environment. Because our nation is so large, the geographic locations of reservoirs are different, and their unfavorable effects are not all the same. Therefore, the problems mentioned in this article are only presented as reference.

I. The Impact of Reservoirs on Natural Environment

(1) Silting in Reservoirs

If a reservoir is built on a river with a lot of mud and sand, a large amount of mud and sand will become silt in the reservoir. When silting in the reservoir is serious, loss due to backwater increases and the useful capacity of the reservoir is reduced. The level of flood prevention is lowered and the usefulness of the reservoir is lessened. The best way to solve the problem of silting is to gradually put in conservancy projects for water and soil in the upstream river valleys of the reservoirs. This is the basic way to control sand.

(2) Erosion or Changes in Flood Discharge in Downstream River Channels

Certain reservoirs discharge clean water because the stored body of water blocks the sand and the conditions of the water and sand of the original river channels are changed. Erosion or a change in the flood discharge in the downstream river channels occurs. The section of the Yellow River below the Sanmenxia Reservoir washed away 2.3 billion tons of mud and sand from September 1960 to October 1964. Clean water washes away mud and sand for a longer distance. During the erosion period, the flow of water in the river segment from Tiexie to Reiguhe in Henan Province is characterized mainly by downcutting. But in the segment from Huayuankou to Gaocun (under the jurisdiction of Dongming County in Shandong), it is characterized by downcutting and widening. The spread is related to the collapse of the flood plain. The flood water of Yongdinghe is controlled by the Guanting Reservoir, and the people have gradually become complacent about the danger of floods. Some people have built houses, planted trees, quarried rock and sand, piled waste soil and garbage in the flood plain near the Lugouqiao section in Beijing. This seriously blocks flood discharge of the river channel. Since the topography of the Lugouqiao area is higher than Beijing City, when an overflow occurs, the safety of the capital will be directly threatened.

(3) Hydrological Conditions and Changes in Water Quality

Building a reservoir will alter hydrological conditions. According to the different purposes of reservoirs, the flow of water is regulated or counter-regulated, thus, the runoff of the river channels is partially or completely controlled. A reservoir used mainly for the generation of electricity has a relatively even distribution of water during the year. The supply of water for living by residents and navigation is also generally even. But reservoirs used mainly for irrigation do not have an even supply of water during the year.

The other hydrological state of a reservoir is its storage of water which elevates the water table and causes the banks of the reservoir to collapse. The loess banks of China's northern reservoirs frequently collapse because of the storage of water in the reservoir and the sudden drop in water level. This type of collapse not only increases the amount of silt in the reservoir, it also threatens the safety of residents along the banks. Land is lost and nearby highways, railroad foundations and buildings are destroyed. By the end of 1961, the amount of earth of the collapsed banks of the Sanmenxia Reservoir was 177 million cubic meters, constituting about 16.2 percent of the amount of silt in the reservoir during the same period. The collapsed banks have created a loss of about 20,000 mu of cultivated land and more than 40,000 forest trees along the eastern banks. This has forced the village of Yangjiawan in Lingbao County to be moved back.

Elevating the water table will also cause damage by soaking. The growth of forests, fruit trees and agricultural crops surrounding the reservoir is affected. The stability of buildings is reduced or destroyed. In 1957, the water in the Guanting Reservoir once extended out 478.0 meters. With the relatively large amount of rainfall during the previous period, the content of water in the soil increased. After being frozen during winter, water and mud became sludge during the following spring, and serious soaking occurred. According to statistics, in 1957, the area of soaked cultivated land along the banks reached more than 28,000 mu and the number of trees soaked in water amounted to 2,000. More than 6,000 houses collapsed.

Because of sedimentation in the area of reservoirs, turbid water may become clear and the water quality may improve. But reservoirs frequently include more complex phenomena, for example, changes in water quality caused by chemical and biological activity. When reservoirs provide water for industry and for living of urban residents, there are special requirements.

(4) Impact of Reservoirs on Climate and Downstream Water Temperature

To a slight extent, large reservoirs also affect the climate of the local region. This is because after the reservoir is built, the body of water in the area of the reservoir increases and the water surface area expands. According to data on the Danjiangkou Reservoir area, the average water temperature in the river channel over many years was 16.6°C. After completion of the reservoir, it rose to 17.9°C, an increase of 1.3°C. But the climate before and after building the reservoir did not change much. The average atmospheric temperature over many years in the area of the reservoir before the reservoir was built was 15.8°C and it was 15.6°C after the reservoir was built, a difference of only 0.2°C.

After building a reservoir, the amount of evaporation from the water surface visibly increases over the amount of evaporation from the ground covered by vegetation before it was built. This allows more water vapor to enter the air, regulates the heat from solar radiation, and causes slight changes in the distribution of rainfall in local areas. The water surfaces of large reservoirs in China's south are mostly cool in summer. The atmospheric strata are stable. The function of atmospheric convection is weakened, and rainfall is reduced. The opposite occurs during winter. The water surfaces are warmer, the atmospheric strata are unstable, the functions of atmospheric convection is strengthened, rainfall increases, and the annual amount of rainfall changes. For example, within 50 kilometers surrounding the Danjiangkou Reservoir, the amount of annual rainfall within 10 kilometers surrounding the area of the reservoir before the reservoir was built dropped about 12 percent after the reservoir was built. The annual amount of rainfall at the center of the Xinanjiang Reservoir was down by 150 millimeters and the amount of rainfall in the surrounding area of the reservoir dropped by about 100 millimeters.

After a reservoir stores water, thermal changes in the body of water are mainly due to thermal exchange between the surface of the water and the atmosphere, differences in the amount of heat between the water entering the reservoir and the water flowing out of the reservoir, and thermal exchange between the body of water and the soil at the bottom of the reservoir. This type of water temperature difference varies at different depths.

The water temperature of the surface layer of a reservoir is high, and the water temperature of the bottom layer is low. The variation in water temperature greatly affects agricultural irrigation and fish cultivation. When releasing water, measures should be taken to increase the temperature of the water released. From 1963 to 1966, the water of the bottom layer of the Sanxipu Reservoir in Zhejiang province was used for irrigation. The average per mu yield of paddy rice was 918 jin. In the winter of 1966, the surface layer of the reservoir was used for irrigation. According to statistics for the 4 years from 1967 to 1970, the average yield per mu of paddy rice was 1,163 jin, an increase of 27 percent compared to that using the water of the bottom layer of the reservoir for irrigation.

If there is a thermal power station along the banks of a reservoir, the release of water by the thermal power station will increase the downstream water temperature. The first stage construction of the Qinghe Power Plant on the banks of the Qinghe Reservoir in Kaiyuan County, Liaoning Province was completed in 1975. Water of the reservoir was utilized for cooling. The surplus hot water (water temperature of 20°C) was directly released downstream for irrigation. The per mu yield of paddy rice increased from 540 jin to 600 to 700 jin. But beyond 20 kilometers to 40 kilometers, the water temperature gradually approached the natural atmospheric temperature, therefore the function of producing increased yields was not great.

(5) Seismic Effect

Large reservoirs may induce earthquakes when storing water. In 1965, an earthquake occurred less than 1 month after the Kremasta Dam in Greece began storing water. On 5 February 1966, another earthquake of 7 to 8 on the Richter Scale occurred. Five hundred houses collapsed, and 1,200 more were seriously damaged. Serious leakage of water occurred at some sections of the dam. The site of our Xinfengjiang Reservoir is not in a strong earthquake region. After it began storing water, earthquakes gradually developed as the water level rose. In March 1962, the region downstream from the dam suffered an earthquake of 6.1 on the Richter Scale. Afterwards, violent aftershocks gradually slowed down and weakened over a period of more than 1 year. At present, people hold two views on the main cause of induced earthquakes by storing water in reservoirs. One view believes that the weight and pressure of water and seepage of water into faults increase the sliding movement between the surfaces of rock layers and reduces the stress under natural conditions, and thus they induce earthquakes. Another view believes that after a reservoir stores water, water pressure in the pores of rocks increases, and the strength of the rocks is reduced, thus, faulting occurs and earthquakes follow. The earthquake induced by the storing of water in the Xinfengjiang Reservoir was a result of the former cause. The channel of permeation of the Xinfengjiang Reservoir is a fractured zone of a fault of silicate structure. Water produces fluidic pressure inside the crust and causes a change in stress. This is an important reason that triggers earthquakes produced by reservoirs. But, there are still different opinions in this regard and further study is needed to understand the patterns.

To prevent the possibility of inducing earthquakes during the beginning period of storing water in a reservoir, seismic monitoring and measurements must be conducted before and after the reservoir stores water and during the course of storing water in the reservoir. When slight seismic activity occurs during the beginning period of storing water in a reservoir, special care must be taken to elevate the level of the water stored in the reservoir slowly.

II. Impact of Reservoirs on Living Organisms

The impact of reservoirs on living organisms is a new topic. The building of reservoirs not only affects the ecological systems on the ground, it also affects the underground ecological systems existing before the building of the reservoirs. For example, physical and chemical changes will create changes in microorganisms and thus affect plants and higher life forms.

(1) Contagious Diseases

As the water surface area of the body of water stored in a reservoir enlarges, water plants near the reservoir and on the banks of the reservoir will flourish. They are suitable for the growth of malaria mosquitos and snails, which increases the danger of spreading malaria and blood flukes.

Before a reservoir stores water, the bottom of the reservoir should be inspected to see if there is a history of contagious diseases. Lavatories, manure pits and tombs that act as media of contagious diseases should be specially sanitized.

(2) Plants

Reservoirs may affect plants during their construction or during their operation. During the construction period, ground surface vegetation in grassland and forests will be destroyed in the flooding area of the reservoir, the area of intensive construction, the area for rebuilding roads, fields for extracting building materials, sites for piling rocks and construction machinery yards.

After a reservoir is completed, the land surrounding the banks of the reservoir will be damp as a result of storing water for long periods. This is suitable for growth of certain plants and beneficial to greening the surroundings of the reservoir. But, there are also some plants that due because the land is too damp.

The noramal water level of many of our nation's reservoirs for multiple year regulation is reached only after several years or a dozen years. There is a lot of exposed fertile land between the normal high water level and the level of water stored in the reservoir in ordinary years. Therefore, the problem of utilization of this land in the dissipated area of a reservoir should be specifically studied.

Water in the lower reaches of a reservoir can be channeled for irrigation to change the conditions of growth of agricultural crops.

(3) Fish

After a reservoir stores water, the surface of the reservoir expands. The speed of water flow slows, and the ecological environment of fish changes. Fish species that like fluidity lessen in number because the conditions have changed or migrate to the upper reaches of the reservoir. Certain fish species that spawn sticky roe can also develop and spawn in the reservoir but when the water level fluctuates a lot, the fish roe adhering to water plants will be exposed to sunshine and die. Therefore, reservoirs are suited for artificial cultivation of fish fry. With the fresh feed provided by the continuous flow of organic matter from upstream into the reservoir, fish species that are adapted to living in stationary water or lingering water can propagate rapidly.

Most of the reservoirs in our nation have favorable conditions for developing fishery production. But at present, the level of fish cultivation in reservoirs is very low. According to statistics, of the 30 million mu of water surfaces in our nation, there are still 1 million mu of water surfaces that have not been used for cultivating fish. Of the more than 10 million mu of water surfaces already utilized, the average per mu yield of fish is only 11 to 12 jin. It can be seen that the potential for developing fish cultivation is very great.

When the original river has valuable species of fish that migrate upstream to spawn, building a large dam will cut off the channel of migration of such fish upstream, therefore, we must study the possibility of building fish passageways.

When cultivating fish in reservoirs, water passageways of the key project and flood discharge facilities should have devices to block the passage of fish to prevent fish from escaping and to prevent the water turbines of the reservoir for generating electricity from damaging the fish, and even to prevent fish from causing accidents during operation of the power station.

When a reservoir first begins to store water, turbidity in the reservoir increases because inorganic residues left over from construction flow into the reservoir. This is unfavorable to the growth of fish. When storing water, the original ground vegetation and organic substances in the soil dissolve in water and consumes dissolved oxygen. Especially in the deep water layers of the reservoir, because the dissolved oxygen consumed cannot be easily replenished, serious shortage of oxygen occurs, therefore, water released from the deep water layers of a reservoir will affect the growth of fish within a definite distance along the downstream river channels. Large reservoirs require a long time to fill. When a large reservoir is filled, the downstream flow will be less. This will affect the growth of fish in the downstream river channels. When a reservoir is near an estuary and when the amount of downstream discharge of the reservoir lessens, salt water flows backward. This also affects the growth of fresh water fish.

In addition, when cultivating fish in the reservoir, substances harmful to fishery resources should be prohibited from being released into the reservoir,

(4) Animals

Birds, mammals, reptiles, amphibians, shellfish and insects migrate as the area of forests and the land area surrounding the reservoir lessen. The environment for finding food and building nests will undergo a definite change.

When planning and designing a reservoir, surveys of the species of animals, the areas inhabited by living organisms and the pattern of propagation must be conducted. Possible changes in living conditions of more rare animals that may occur after completing a reservoir must be considered, and protective measures should be studied to prevent extinction. After the reservoir stores water, grounds where hunting is prohibited should be zoned. Protective regulations can be established to protect attractive migratory birds that have been attracted to the reservoir.

III. Impact on Human Life

(1) Flooding Due to Reservoirs

Building reservoirs requires moving the population in the reservoir area. Water from the reservoir may flood land, ancient artifacts and ruins, mineral deposits and other facilities, and the construction of reservoirs may require rebuilding railroads, highways, power lines and communications lines. The problem of flooding due to reservoirs is not only related to the correct selection of the scale of the ater conservancy project, it is also related to the restoration and development of production by the people, life and regional economics of the people moved from the reservoir area.

Many of the reservoirs built since the founding of our nation still have lingering problems because of imperfect considerations and inappropriate handling. This not only affects the enthusiasm of the masses for building reservoirs, it also affects the development of the gain of the engineering project. It is worthwhile for our water conservancy departments and related departments to learn some lessons from such experience.

(2) Downstream Damage

Besides those mentioned above, there are the following:

1. The flow of water to a diversion type hydroelectric power station and other diversion projects (such as diversion across regions) has been interrupted and sections without water have been created. This has affected the use of water by industry, agriculture, people and animals of the local region. The treatment of the problem of sections without water and the treatment of the problem of flooding due to reservoirs described above are equally important.

2. Accidents of large dams will create massive damage in the lower reaches. There have been many painful examples in our nation and in foreign nations. There are many causes of dam accidents such as mistakes in regulating and

using the dam, slightly lower hydrological calculations, irrationality in structural design, poor quality of construction, malfunctions or breakdowns of flood discharge facilities during an overwhelming flood, and destruction by man and wild animals. In active earthquake regions, a major earthquake would also endanger dams.

To reduce the damage in the lower reaches when an accident occurs in a large dam, besides stopping the above causes, the scope of the impact of a collapsed dam and the time and water level of advancing flood waters must also be estimated, and plans for emergency evacuation of residents and important materials must be drawn up.

To prevent accidents at large dams, design and construction of the main reservoir must be done well, and during operation and management of these dams, a system of inspection must be established. As soon as an abnormal situation is discovered, necessary measures must be taken immediately.

Important reservoirs must have a reliable and rapid communications and warning system. When there is a sign of danger, an alarm must be issued immediately so that residents can be safely evacuated in time and important materials can be rapidly transferred.

3. As described above, large dams not only block the flow of water, at the same time, they also block navigation and the flow of logs in river channels. This means that when building a dam, the possibility of building structures for navigation (such as ship locks, lifting locks) and log chutes should be considered at the same time so that requirements for use of the waterways by the various sectors of the national economy can be satisfied as much as possible.

(3) Pollution of the Reservoirs

Pollution of reservoirs can be classified into two types according to the source: One is natural pollution. This refers to pollution of the water source of a reservoir during natural runoff. It is the result of the confluence in the reservoir of river water containing toxic substances produced by some chemical elements or by the rotting of natural plants due to special geological and natural conditions of the river valley controlled by the reservoir. The other type is caused by human factors, such as the release of industrial waste water, agricultural waste water and human waste at the upper reaches of the reservoir. Such waste enters the reservoir via the river channels and causes the water quality to worsen. This is also called man-made pollution. The former should be considered according to the purpose of the reservoir at the time of planning and designing the reservoir. The latter is a matter of controlling the human activity which causes the pollution.

When building large and medium reservoirs, factories, tourist facilities, sanatariums and farms are frequently built around the reservoirs. These units frequently release large amounts of oil, oily suspended substances, chemicals and such harmful and toxic substances and other harmful wastes which pollute the water quality of a reservoir.

Pollution of a reservoir affects the quality of water supplied by the reservoir for industrial and agricultural use at the lower reaches, it affects the safety of water used by human beings and animals and it affects environmental protection. The frequently seen harmful substances described above include mercury, chromium, cadmium, lead, arsenic, phenol and cyanides.

Pollution of reservoirs causes acute or chronic poisoning of fish in the reservoirs and in downstream river channels. Because toxic substances accumulate in the body of fish and in feed, they are also harmful to people who consume such fish over a long period.

Waste water of the copper mines near the Erlongshan Reservoir in Bing County, Heilongjiang Province was released directly into the upper reaches of Jianganhe without being treated, causing massive deaths among fish in the area of the reservoir from 1972 to 1975. Later, the reservoir had to be drained empty. This affected the gain in irrigation for many years.

Building of new industrial and mining enterprises around the area of reservoirs must be uniformly considered with the building of reservoirs. Units that seriously pollute and do not have treatment facilities for polluted water should be ordered to move away. Those toxic chemical fertilizers and farm chemicals that cause serious pollution must not be used for long periods by farms. Tourist and sanitarium facilities must have purification and treatment facilities for polluted water produced by them and such polluted water must not be released directly into the reservoirs. It should be pointed out that the polluting source of reservoirs can be purified but a lot of investment is required and it is very difficult to eliminate all harmful substances. Therefore, besides implementing methods of purifying polluted water, the more important is prevention. Necessary measures must be taken to prevent harmful substances from being released into the reservoirs.

To a certain degree, reservoirs allow sedimentation, coalescence and dilution of substances flowing into them. But this varies according to the amount of incoming water, the amount of water stored in the reservoir and the amount of incoming toxic substances. The Guanting Reservoir treated some of the harmful substances released by the factories during the beginning of the 1970s. But, at present, Xuanhua upstream still has a paper manufacturing plant, a chemical fertilizer plant and a cement plant that release toxic substances into the Yanghe which flows into the Guanting Reservoir. These have worsened water quality. According to statistics, the river valley of the Guanting Reservoir has 23 medium and small cities and 242 factory enterprises that release polluted water into the river channels. The annual release of polluted water reaches 116 million tons, and 40 percent of this contain harmful substances. Observing the polluted water flowing into the reservoir, we see that the amounts from Yanghe and Shangganhe are the largest. Although the amount of polluted water from Weishuihe and Shacheng on the bank is small, but the polluting source is relatively close to the reservoir and the self-cleansing ability is weak.

Because the water source is polluted, when the reserve of water in the Guanting Reservoir is less than 300 million cubic meters, the contents of phenol, mercury, and cyanides in the water all surpass the allowable amounts by national standards. Therefore, the Guanting Reservoir Administration believes the water quality alert level of the reservoir is 200 million cubic meters.

(4) Scenic Attractions and Tourism

When designing a reservoir, besides considering the technical possibilities and economic rationality, aesthetic considerations should also be taken into account. Large dams can change the scene of the dam area and the surroundings. This is especially important for reservoirs that possess a tourist character. The scenery of large dams and reservoirs must harmonize with the surrounding scenery.

Some reservoirs are recreational reservoirs. They must maintain a definite water level during the tourist season. For example, the water level of the Shisanling Reservoir in Beijing was once established at not lower than 90.0 meters. This is the requirement of the tourist industry.

Trees and buildings in the region of a dissipated water level in a reservoir should be removed when cleaning the reservoir to facilitate fishing and navigation in the area of the reservoir.

To beautify the natural environment, we must protect precious natural scenery. We must especially protect artifacts and ruins, open tourist highways, hostels, plan uniformly so that the natural scenery of the area of the reservoir is in harmony and the environment becomes more beautiful.

(5) Construction

At present, the general construction period of China's water conservancy hubs is long. Relatively more laborers are involved, and construction machinery at the construction sites often create noise, dust, smoke, waste gas, waste water, waste rocks, powder, coal dust, garbage and polluted water. The local environment and the life of residents have been destroyed. Therefore, when designing construction and during the entire course of construction, we should consider the harmful contents of pollutants released, estimate the amounts to be released and plan the method of releasing pollutants and the course of pollutants to avoid or reduce such effects as much as possible. For example, when selecting traffic lines, can they be combined with the local traffic routes; using natural conditions as much as possible in planning the sites for dumping soil, waste rocks, waste materials, and in planning sites for yards to store construction materials so as not to hinder the productive activities and life of the residents; use methods of treating waste material that can re-utilize waste; it is best that the polluted water from washing sand and rocks be treated by sedimentation before it is released into the river channels; temporary buildings should destroy the natural environment as little as possible, or practical remedial measures that can be implemented later.

IV. Two Suggestions

1. Water conservancy departments and various economic departments must all pay attention to the unfavorable impact of reservoirs upon the environment, and they must place sufficient emphasis on such impact. Any unit that sacrifices and destroys environmental ecology in exchange for the development of production is absolutely wrong.

2. The relationship between the building of reservoirs and the environment fundamentally speaking is having the same goal. The two are mutually promoting and mutually influential. The massive function of the reservoirs mentioned above shows that reservoirs themselves improve the environment, promote the development of production, create benefits for the people, but if the planning and design of reservoirs are inappropriate or if their utilization and management are poor, and if the quality of construction is not good, they will bring about an unfavorable impact on the environmental ecology. They will also harm the people, therefore, as we utilize water conservancy resources to the maximum extent, we must also protect the environmental ecology as much as possible.

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OVERALL AND ECONOMIC VIEW OF ECOLOGICAL BALANCE

Beijing GUANGMING RIBAO in Chinese 5 Feb 82 pp 2, 3

[Article by Ma Shijun [7456 0013 7486], Chairman of the China Ecology Society and member of the Academic Department of Biology of the Chinese Academy of Sciences: "On Overall and Economic View of Ecological Balance"]

[Text] Beginning in the mid-1950s, the laws of mutual relations among the many elements of nature were neglected during the course of intensive development of industry and agriculture and the massive exploitation of natural resources. Therefore, the problem of ecological imbalance has emerged. It has threatened the life of mankind and socio-economic development. It has also provided a new comprehensive subject for ecology and sciences related to ecology.

In nature, a relatively stable dynamic balance is achieved via a complex process of flow between material and energy and mutual action between inorganic environmental elements and living organisms. Ecological systems which are the functional units that make up nature possess definite structures and special functions, including control and transmission of information for "regeneration", "symbiosis", "mutualism", "sequential growth" and "self-construction", "self-repair", "self-adjustment" and "auto-selection".

The complete structure of an ecological system consists of many basic units and secondary systems. It is a multi-dimensional structure. The special functions are determined by the different combinations of units of many different properties or several units that are the same. The multiplicity of life forms in nature and the complexity of mutual relations make an ecological system a very complex system with many elements and many variables, and many subsystems are formed from the different variables and their different combinations as well as changes within a definite range of variation of these different combinations. The diversification of subsystems is not only related to the number of parameters and the properties of the parameters, it is also closely related to the mutual relations between parameters and parameters. The subsystems have their own special functions and definite structure within the entire ecological system, and they are indispensable components of the entire ecological system. Recognizing the relationship between nature and the ecological systems and the complex relations between the whole ecological system and its subsystems is very important in clearly understanding the problem of ecological balance.

The following expresses two personal views on the question of ecological balance.

The Overall View of Ecological Balance

Ecological balance refers to the mutual relations between living organisms and between living organisms and their environment in a system. The stability manifested among the three is a characteristic of the ecological system. The ecological balance of a certain region is determined by the specific living organisms and environmental conditions of that region. The network formed by the living organisms and the environment is the foundation of forming an ecological balance. Without the entirety of the mutual relations in nature, the problem of ecological balance in nature will not exist. Similarly, in a semi-artificial and artificial ecological system, if mutual relations among the many elements are not established, there is no ecological balance. The entirety relies on a definite structure and corresponding functions. The structure provides the channels for the flow of materials and the flow of energy. It is the framework for establishing the interconnection between the units or the subsystems. The completion of normal functions must rely on a definite structure and also on the balance of the output and input of materials and energy, the transmission of information, the inorganic environmental states formed jointly by physical and chemical conditions before it can complete the "regenerative" function. In the present situation, maintaining coordination between water and heat, increasing the vitality of the soil environment and increasing the self-cleansing ability of the environment are outstanding problems.

The ecological balance formed within a natural biogeographic region does not mean that all units or all subsystems that make up the entire system are in an absolutely stable state. In fact, the entire system can maintain relative stability exactly because of the ceaseless processes of mutual exchange, compensation and regulation among the units or the subsystems. Evolution of life is a process of a continuous jump from one stable state to another more orderly and stable state which better suits the selective functions at the time. If the old state of stability always remains stable, progress towards a new state will not occur. Only by losing balance—sudden change or readaptation can a new stable state be reached to push forward the continued development of nature.

Because ecological balance allows proportional changes of the components (species) of the structure under the prerequisite that normal functions are basically guaranteed within a system, the complexity of the structure is appropriately simplified. The coordinated proportion of water and heat and the amount of material for regenerative functions which have to be maintained in a certain region vary according to the types of physical entities that compose the system, and there are regional patterns which can be followed. The classification of regional characteristics mainly rely on climate, soil, vegetation and social factors.

The Economic View of Ecological Balance

Economic ecology is a new branch of science that has developed in recent years. It uses the viewpoints and methods of economics to describe the laws of ecology. It emphasizes the study of ecological problems that occur during the course of high speed economic development, and how economic principles and ecological laws can be utilized in combination. We know that in an ecological system that has developed well, its structure and function are coordinated. Self-regulating functions are present between the units and the subsystems, therefore the working efficiency is high. But, when the entire system is in a state of balance, it is generally believed that its biological elements, i.e., animals and plants, have already reached a maximum number. The various life forms are very closely connected. The amount of living matter produced by the realm of living organisms is completely absorbed and utilized by living organisms and the net production value is near zero. In other words, the pure economic gain during that stage is not high. This requires the use of economic viewpoints to improve the structure of the system on the basis of guaranteeing the normal functional channels according to ecological laws and to change the system with a low economic gain into a system with a high economic gain so that it can fit the requirements of economics of human society.

Economic ecology requires people to account for everything and account for the total in balancing the gains and losses of the entire system. Any construction project that affects regional natural functions and any measure that reforms the local natural ecological environment must be considered under the overall view and the economic view simultaneously, this means taking their economic gain and their ecological gain into consideration, and they must coincide with the following principles:

1. They must benefit the locality and they must also benefit the entire situation or at least not harmful to others;

2. They must benefit the present, take the future into account, and at least not harmful to the future;

3. They must help improve the people's life or not be harmful to human health.

Therefore, the development and utilization of regenerative natural resources must emphasize both utilization and cultivation so that the sources and supply will not be exhausted. Nonregenerative resources must be clearly understood. The balance of payments must be weighed, and ways must be opened up on a broad basis to suit the needs of population growth and economic development.

Conclusion

Our nation has already accumulated some experience in the improvement of ecological systems according to ecological laws and in rebuilding and restoring natural ecological balance. We should conscientiously summarize it. At present, our nation is in a stage of readjustment and at the beginning of high speed development of the economy. Serious imbalance of ecological balance has already occurred in some regions. We must campaign for an emphasis on the entirety of ecological balance and on implementing the principles of economic ecology in industry, agriculture and water conservancy construction. Experience tells us that any large construction project will involve many factors and will involve the knowledge of several and even many sciences. And there is no doubt that comprehensive problems must be solved by comprehensive measures and methods. Now, ecological thought has already penetrated scientific research work on a broad basis, but it has not been sufficiently manifested in our nation's industrial and agricultural construction projects. Our nation is a nation with a large population and a wide expanse. The ecological and geographical environments are many and varied. Now, people are beginning to recognize the importance of suiting measures to local circumstances, but regarding the profound meaning of "local circumstances", especially the interconnections between the various elements that compose this real space, it seems that people have not yet learned any profound lessons from past failures. This is worth propagandizing in a big way by our comrades engaged in ecological work.

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SHANXI POLLUTION WORK FOCUSES ON PROTECTING AGRICULTURAL LAND

Taiyuan SHANXI RIBAO in Chinese 25 Dec 81 p 2

[Article: "Resolutely Prevent and Control Environmental Pollution, Rationally Develop and Utilize Water Resources"]

[Text] In his report on governmental work, governor Luo Guibo [5012 6311 3134] stated that the pollution of Shanxi's atmosphere and water resources is becoming more serious each day, and has done great harm to human health and the ecological balance. We must resolve to systematically prevent and control environmental pollution.

He reiterated that all new construction, expansion, reconstruction and major renovation and modernization projects must follow the "three simultaneous" principles and that the relevant departments must exercise strict oversight. All organizations which discharge wastes in excess of standards must be fined according to regulations and be assigned a deadline for dealing with the problem. A major effort must be made to move ahead with construction for Taiyuan's conversion to gas, and use of gas by the public must be developed in step-by-step fashion. The cities of Taiyuan, Datong, Yangquan and Changzhi must carry out boiler modernization, modernize cooking ranges used by the public, and extend the use of honeycomb briquet stoves.

The work of expanding the renovation of our territory, and effective exploration, development, utilization, management and protection of our national resources constitutes a major task. The most pressing task at present is protection of agricultural land, thrifty use of land, and sparing, rational use of every inch of land. Strict control must be exercised over the taking of land for capital construction and the use of land for private dwellings. Rational development and utilization of water resources is another important task of renovating our country's territory. The problem of inadequate water resources is currently a very pressing one in this province; industrial, agricultural and public water use are steadily increasing, and there is serious waste. If this tendency is not altered, in a few years the water shortage will reach disaster proportions. Accordingly, the province and the localities must establish organizations for managing the development and utilization of water resources, and the drilling of deep wells must be approved by county level or higher water conservancy departments. In the localities where water resources are scarce, plants with high water consumption may not be built, reconstructed or expanded. Industrial and mining enterprises must energetically expand water recycling, multiple utilization of water and wastewater recovery. Agriculture must effectively manage and use existing water conservancy facilities and replace the method of slow irrigation with large amounts of water. Water meters must be installed in offices, factories and mines, army units, schools and urban households, and a major effort must be made to conserve water. For the long term, the primary means of solution is a major expansion of water conservation through afforestation.

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EXISTENCE OF ACID RAIN NO LONGER DOUBTED, AUTHORITIES URGED TO TAKE ACTION

Beijing GUANGMING RIBAO in Chinese 5 Feb 82 p 2

[Article by Zhao Dianwu [6392 3013 0063]: "Delegates to the 'Discussion Meeting On Pollution of Rain and Acid Rain' Point Out That Acid Rain Has Occurred In China and Concerned Departments Should Strengthen Observation and Research"]

[Text] Does China have acid rain? This was the major topic of the "discussion meeting on pollution of rain and acid rain" held recently in Beijing. The scientific and technical personnel of environmental protection and meteorological departments of some of the provinces and cities throughout the nation participated in this discussion meeting.

The answer to this question is positive. Observations during the past two years show that acid rain has occurred in some cities in China. In some of these cities not only is it a common occurrence, the acidity is also very high. The corrosion of building materials and metals observed at some localities and the poor growth of forests may be related to acid rain.

Acid rain is closely related to energy resources. Sulfur dioxide and nitrogen and oxygen compounds released by the burning of coal and petroleum are oxidized to become sulfuric acid and nitric acid in the atmosphere or in rain drops. This is the cause of acid rain. But the atmosphere also contains alkaline substances which can neutralize acids. Therefore, the formation of acid rain is related to the release of sulfur dioxide as well as other pollutants in the atmosphere and the topography, weather and soil properties of the localities. For example, the coal burned in Zhongqing City has a high sulfur content. The topography and weather conditions are favorable to the oxidation of sulfur dioxide into acid. Acidic soil also reduces the amount of alkaline substances in the atmosphere. These may be the causes for the occurrence of rain with a higher acidity.

The atmosphere of many cities in China has been polluted by sulfur dioxide to varying degrees. Under this situation, what is the situation for acid rain in the whole nation? What harmful results will be brought about by acid rain? How can acid rain be treated? These questions are worth everyone's attention, especially the regions in the south where coal with a high sulfur content is burned.

Rainfall is the only source of ground surface water. We cannot concern ourselves only with the amount of rainfall while neglecting water quality. Therefore, the meeting suggested the departments of environmental protection and meteorology strengthen the observation and research in acid rain.

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MEASURES FOR IMPROVEMENT OF BEIJING AIR QUALITY SUGGESTED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 5, 1981 pp 4-6

[Article by Zhang Yichuan [4545 0110 1557]: "Some Views on Methods of Solving the Capital's Air Pollution"]

[Text] When the winter heating season arrives, the entire capital is covered by smog. In recent years, the cognizant departments have taken active measures to deal with air pollution in the capital, but the pollution situation not only has shown no essential improvement, but is actually becoming steadily worse. Under these circumstances, it will obviously be extremely difficult to implement the Central Committee Secretariat's proposal that "Beijing should be turned into a first-class city, the cleanest, healthiest, most beautiful in the world."

The sources of air pollution in the capital are numerous, but the main source is direct combustion of large quantities of coal. In 1980, coal accounted for 77.1 percent of the fuel used in Beijing. Not only is this proportion higher than in Shanghai and Tianjin, it is also higher than the national average figure of 71.6 percent. In civilian energy consumption, including heat supply by heat and power stations and electricity for daily use, coal accounts for 78.6 percent of fuels used; excluding heat supply from heat and power plants and electricity for daily use, the figure is 89 percent. These fuels are concentrated in the city proper, and fuel use in the city and nearby suburbs accounts for 80 percent of total fuel consumption. The result is the emission of nearly 300,000 tons of sulfur dioxide and more than 400,000 tons of ash into the air every year.

According to statistics from the relevant departments, the capital has more than 10,000 boilers of various types, more than 6,000 water heaters and more than 10,000 smokestacks. Among these boilers, about 60 percent are for heating (primarily small boilers with steam production capacities less than 2 tons per hour), and only a third are mechanically stoked, while the rest are manually operated. Only 10 percent of boilers have ash control equipment. Some 87 percent of these boilers and 78 percent of the water heaters are located in the city proper and nearby suburbs, accounting for only 5 percent of the municipal area, in addition to which there are more than 2,000 industrial furnaces and more than a million small stoves used by offices, shops and establishments for cooking and heating, so that once water arrives, smoke and ash arise everywhere in Beijing city, and particularly in the central urban area, irritating the nasal passages and making it difficult to find one's way about. In the past 10 years, the cognizant departments have made considerable efforts to rectify this situation and have repeatedly undertaken boiler modernization work. In the 1960's, iron foundry boilers dating from the 1950's were converted to straight-tube type water tube boilers; in the 1970's, quick-mount boilers and side-mount reversing row-type boilers were installed. Every year the housing management departments and environmental protection departments expend more than 1,000 tons of steel materials, along with manpower and material resources, for boiler conversions. But because of the low efficiency of existing small boilers and the fact that they burn second-quality coal, and in particular because they lack effective ash control and sulfur removal facilities, large quantitites of ash and sulfur dioxide and other harmful substances are still emitted into the air, so that despite all efforts to improve it, there has still been no clear change for the better in air quality.

Below, several suggestions for improving the capital's air pollution situation are put forward for discussion with comrades in the field and those concerned about improving the city's environment.

1. We should actively pursue centralized heat supply. Centralized heat supply will have a major effect in decreasing atmospheric pollution. Beijing's eastern suburbs are an area in which large-scale plants are concentrated, but because centralized heat supply is used, the sulfur dioxide concentrations during the winter heating season are only 0.09 mg/m^3, while in the central city, which lacks centralized heat supply, concentrations reach 0.27 mg/m^3. According to calculations by the city's environmental protection office, the pollution effect produced by small stoves (i.e. the degree of pollution produced by the burning of a given quantity of coal) is more than 60 times as great as for large boilers with high smokestacks.

At present, efforts must be made in three main areas to implement centralized heat supply in Beijing. First, full use must be made of the two already-constructed heat and power stations, particularly the No 2 Heat and Power Station, which thus far has not achieved its design capacity; an effort must be made to realize the original plan of supplying heat to an area of 5 million square meters in the eastern suburbs and tearing down more than 200 smokestacks. Second, in industrial areas with a year-round heat load such as Qinghe, Daxiaoting, Songjiazhuang and the like, new industrial heat and power plants of various sizes should be constructed in accordance with specific circumstances. In addition to meeting industrial heat needs, these industrial heat and power plants should also take care of the heating needs of residences and other buildings in surrounding areas. Third, when developing of centralized boiler plants of various sizes for centralized heat supply, relatively large-capacity boilers should replace large-quantities of scattered low-efficiency small boilers, and improvement of boiler efficiency should be used to decrease coal consumption, thus both saving energy and decreasing air pollution. At present the implementation of such centralized heat supply from such boiler plants is well under way. Their heat supply range is relatively flexible. At the same time, centralized boiler plants require a much shorter construction time than heat and power stations and are easier to fit into new tract residential districts. When developing centralized heat supply for the public, large and medium-sized hot water boilers should be used, because their efficiency is relatively high (generally 75 to 80 percent), so that they would save 60 kg of coal per million kcal of heat supplied compared with commonly-used heating boilers. This means that theoretically, 72 tons of coal a year could be saving in the supply of heat to 10,000 square meters of building space. Given the usual conditions of new residential construction in Beijing, the use of hot-water boilers for centralized heat supply in new tract residential districts where the built-up area does not exceed a million square meters is economically feasible. Currently, the residential tracts being built up in various locations in Beijing only cover a few hundred thousand square meters, and accordingly boiler plants for centralized heat supply can be used in all the tract residential districts being built in Beijing.

2. Rational use should be made of energy, the best quality fuels should be preferentially allocated for private-sector use, and an effort should be made to develop the urban gas industry. With our country's limited oil and gas supplies, rational use of energy is extremely important. Some industrially developed countries preferentially supply the best fuels for use by the public. Currently some of the world's largest cities have already converted to gas, using primarily natural gas. Although in 1980, 66.9 percent of Beijing's inhabitants did their cooking with gas, in the total energy breakdown for the Beijing area, the share of gaseous fuels (excluding noncommercial gas) was only about 1.5 percent, while it was only 9.6 percent of energy consumption by the public. Because of the limited availability of gas, it can only be supplied to the public for cooking and water heating; large quantities of coal-burning stoves and small heating boilers are still in existence throughout the city. Accordingly, gas currently makes only an insignificant contribution to decreasing air pollution. As everyone knows, 1 kg of the liquefied natural gas supplied to the public can replace about 7 kg of coal, while if it is used as an industrial fuel it replaces only 2.5 kg of coal. One kilogram of heavy oil used to produce city gas for public use replaces 3-4 kg of coal, but when directly used in industrial furnaces and electrical boilers it replaces only about 2 kg. Clearly, supplying the best-quality fuels to the public has good conservation results. And at present, when it is difficult to increase the available quantities of oil and gas, implementation of the principle of allocation in accordance with an overall plan and efficient use of energy resources, suitable adjustment of the energy supply and allocation policy, and thorough utilization of the current potential of the energy industry would increase the proportion of high-quality fuels in all fuels supplied to the city and solve the short-term problem of city gas supply. In 1980, more than 2.5 million tons of heavy oil and crude oil were burned in the Beijing area, of which public power stations burned nearly 1.5 million tons. If some power plants which should not burn oil were converted to coal, and if oil consumption by certain industrial boilers were resolutely decreased, some of the heavy oil saved could be used for gas production, pipeline gas supply could be extended, and the gas supply could extend to residential cooking, public welfare, industrial process gas and some heating gas. If pipeline gas supply were expanded it would be possible to replace some of the liquefied gas being supplied to multistory apartment blocks, to supply one-story residences within the city and to carry out experiments with the use of liquid petroleum gas for heating. Some of the heavy oil saved from the

readjustment could also be used for suitably equipped boilers and kilns in critical areas, so as to improve their environmental conditions. Thus, without increasing total heavy oil consumption in Beijing it would be possible to save energy and greatly improve the air quality in the central city area.

3. Rational coal allocation in terms of the technical characteristics of coal-burning equipment. Both the development of centralized heat supply and the rational use of energy resources, with preferential allocation of high-quality fuels to the public and development of the municipal gas industry, require a relatively long period of time. At present, single-story houses are rather numerous within the second beltway (more than 13 million square meters, accounting for about 46 percent of building area in the city), and there are more than a million small stoves and about 3,100 boilers, accounting for a third of all the boilers in the city. Because the roads in the city are narrow and it is difficult to build heat and power stations and large-scale centralized boiler plants for the expansion of centralized heat supply, it is estimated that the situation of dispersed burning of coal for heat supply will have to continue for a relatively long period of time. Under these circumstances, there is a problem of efficient distribution and utilization of energy. Accordingly we should, in accordance with policy, clearly specify that the supply of high-caloric-value, low-ash, low-sulfur-content coal should be guaranteed to medium and small sized boilers in the central part of the city, while lower-quality coal should be supplied to large boilers which can install highly effective ash removal facilities and use high smokestacks, such as those in heat and power stations. But currently the situation is just the opposite: everyone burns what coal he is given, and the variety supplied varies from year to year. Power stations need to burn powered coal, but they are sent lump coal, and medium and small-sized boilers need lump coal, but they are supplied finely-powdered coal. As a result, a reasonable readjustment of coal distribution is an extremely urgent matter for improvement of the quality of heat supply, saving energy and improving the environment, and should be energetically pursued.

4. The optimal method of fundamentally improving the capital's air pollution situation is to improve the current fuel structure, based primarily on coal. This change does not mean ceasing entirely to burn coal, but increasing the proportion of gas and oil used. As everyone knows, London is world-famous for its fogs; but in the 1950's there were several earth-shaking "smog incidents," and in the 1960's, after England developed the North Sea gas fields and natural gas came into use, London's fuel structure changed, with the result that air quality was greatly improved. England achieved these good results with gaseous fuels accounting for only 31 percent of total fuel consumption. Obviously, to improve the environment it is not necessary to replace all coal with oil or gas. In 12 months in 1977 and 1979, because of a lack of wind and the occurrence of thick inversions and fogs which persisted for rather long periods, it is estimated that sulfur dioxide levels in Beijing's air were 2 to 7 times higher than usual, approaching the conditions of London's "smog incidents" and producing widespread concern. We believe that since it is difficult to rectify the situation of dispersed boilers and small stoves in the city, it is particularly important to improve the fuel structure. We hope that the cognizant departments will step up their investigation of oil and gas reserves in the North China region and

provide Beijing with some natural gas: if this were suitably used, there could be a considerable improvement in Beijing's air quality.

Consensus on several questions is especially needed now. For example, on what footing shall environmental protection for Beijing be placed? Why has the problem of inefficient oil and gas burning gone unresolved for a long time, and why is it so difficult to use a little gas and oil in order to improve the capital's environment? The problem lies in lack of consensus. If this consensus could be reached in several matters, so that people were willing to spend a little and a conscientious effort were made to solve certain problems, it would not be so difficult to improve the capital's air quality.

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SHANGHAI HOLDS CONFERENCE ON HUANGPU RIVER POLLUTION CONTROL

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 5, 1981 p 13

[Article: "A Helpful Undertaking in Work on an Environmental Pollution Control Plan"]

[Text] The Huangpu River in Shanghai is a stream of many capabilities: it is the only source of drinking water for the inhabitants of the city, a source of water for industry and agriculture, the basis for port activities and water transport, a sewage outlet and a flood protection and drainage resource. But increasingly grave pollution is already hindering its use for drinking water and threatening the people's health and the development of industrial and agricultural production. It has now become essential to deal with pollution of the Huangpu River. But how can a scientific, feasible control plan be drafted? The "Work Conference on a Pollution Control Plan for the Huangpu River" held between 29 July and 4 August of this year made a helpful attempt to do so.

Specialists and representatives from relevant national departments and from Beijing, Jiangsu, Zhejiang, Wuhan and Shanghai concluded that the overall policy for the Huangpu River should be "coordination of long-term and short-term measures, attention to both causes and results, integrated protection, gradual implementation," and "developing the sources of pure water and limiting the flow of sewage," with work focusing on the next five years. The general consensus was that the overall plan should include the measures described below.

1. A unified plan for protection against pollution sources. For both the near term and the long term, controlling discharges by industrial enterprises should be the main focus of integrated pollution protection for the Huangpu River. Because there are already more than 6,000 plants crowded closely together within Shanghai city, it is difficult to improve the geographical distribution of plants. But industry enjoys certain advantages in Shanghai, and if these are thoroughly utilized a certain pace of development can be maintained in the future without an increase in the qualities of pollutants discharged.

2. A water quality plan. The systems approach should be applied, water quality simulation studies undertaken, and overall control of pollution sources exercised. The purpose of this work is to assure that all of the potential of the Huangpu River is developed. The water quality plan will be rather technical in nature and will require rather large amount of basic work: synchronized studies of water quality and hydrography, water quality evaluation and the like.

On the basis of the water quality plan, the environmental protection departments will be able to carry out overall planning and take account of the entire situation, conduct analysis and comparison of various pollution control programs, and arrive at ways of achieving water quality standards with minimum investment while meeting the water-quality requirements of the various water-using departments.

3. A water resources protection plan. The Huangpu River is a tidal river and its dilution and self-purification capabilities are affected by the upstream water quality and tides, so that it is necessary to maintain a certain water quality in the river, to increase the river's discharge during the dry season and to protect the quality of the water sources that feed it. Improving drinking water quality is a long-term task in Huangpu River pollution control, but it must be suitably carried out in the near term. At present, thought should be given to better location of water intake points and improvement of water purification processes. Improving the water intake points and improving the quality of the water withdrawn constitute a relatively feasible and fundamental approach, but they should be combined with a water resources plan to assure that during the dry season there is a relatively stable flow at the water intake points and that the watershed area will be suitably protected.

4. A plan for the construction of a municipal sewage treatment plan. The size, location and treatment requirements for the sewage treatment plan should be closely coordinated with the overall plan.

This conference has resulted in relatively clear ideas regarding the overall policy for pollution control in the Huangpu River, and its objectives and specific content. This is not only a favorable step in the work of controlling pollution in the Huangpu River, but also a helpful attempt at regional environmental pollution control work.

The Shanghai Municipal Party Committee and the Municipal People's Government attached extremely great importance to this conference, and municipal party committee secretary and Deputy Mayor Comrade Han Zheyi [7281 0772 0001] spoke at it.

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SEAWATER POLLUTION AT YANTAI REDUCED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 5, 1981
pp 13, 17

[Article: "Yantai Ocean Fishery Company Decreases Harbor Water Pollution"]

[Text] Since the beginning of the 1970's, pollution in Yantai Harbor has been steadily becoming more serious. The main reason for it has been discharge of large quantities of industrial wastewater and domestic sewage into the sea, in addition to which, as maritime transport and fishing boat traffic have rapidly expanded, the ships themselves have been discharging oil-containing water. In the past, every time the fishing boats underwent dock overhaul they had to clean out their oil tanks, and the ships would generally discharge 4 to 6 tons of oil-containing wastewater. Since every year this company carried out dock overhaul of an average of 50 fishing vessels, about 200-300 tons of oil-containing wastewater was discharged, in addition to the water discharges resulting from cleaning of oil tanks and oil barges, which brought the total to more than 400 tons. The discharge of this oil-containing water into the sea caused a certain amount of pollution of the sea area around Yantai Harbor.

In order to prevent further pollution of Yantai Harbor and make the beautiful harbor "an area of blue-green mountains and jade-green sea," starting in 1978 the Yantai Ocean Fisheries Company organized its engineering and technical personnel for a study of discharge of oil-containing wastewater by fishing vessels; they coordinated long-term planning with short-range measures and drew up a four-point plan. First, test development of an 0.2-ton-per-hour small-size oil separator suitable for wastewater treatment by fishing vessels while on the fishing grounds was to be carried out. An experimental model underwent shipboard testing and evaluation and basically met the original design requirements; in September 1980 it was evaluated by the Shandong Province environmental protection office, and the treated wastewater it produced met state discharge standards. As a result, this product received a Shandong Province Class 3 prize for scientific achievement in 1980. In the second half of this year the device went into small-series production. Second, a set of oil-containing wastewater treatment facilities were to be installed within the harbor so that wastewater from the repair of fishing vessels and from the rinsing of oil tanks, oil barges and oil tankers could be fully treated. After precipitation, heat treatment and filtering, clean water was discharged into the sea with an oil content not exceeding 1 liang per 10,000 jin of water, which was entirely in accordance with state wastewater discharge standards for harbors. This not only protected the water area of Yantai Harbor from pollution, but also led to the recovery of large quantities of diesel oil from the wastewater, resulting in a saving of energy. Statistics indicate that between the end of 1978 and May of this year, a total of 251 tons of diesel oil was recovered, with a value of more than 30,000 yuan. This recovered diesel oil can be used in the same manner as ordinary diesel oil. The installation of the entire set of equipment required an investment of only 15,000 yuan, so that in the 2 1/2 year period it has more than repaid the initial investment. Third, to deal with the petroleum pollutants accumulating in large quantities in the bilges of motorized fishing vessels being repaired within the moorage area, preparations were to be made for an oil separator to be mounted on an auxiliary ship in the harbor, allowing it to pump out, separate and filter the oil-containing bilgewater. Currently the equipment for this ship is being assembled. Fourth, the company was to make comprehensive pollution control in the harbor area a major scientific research topic, and the scientific research departments are currently carrying on specialized studies on this topic so as to make a contribution to the construction of a scenic fishing port in Yantai Harbor.

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HEAVY METAL CONTENT OF XIANG, PEARL RIVERS STUDIED

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese Vol 3 No 1, 28 Feb 82 pp 35-38

[Article by Qu Cuihui [1448 5050 6540] and Zhao Guijiu [6392 2710 0036], Geographical Chemistry Research Laboratory, Institute of Geography, CAS: "Investigation of States of Heavy Metals in the Water of the Xiang River and Pearl River (Guangzhou Section) and a Suggestion on Water Quality Monitoring and Evaluation"]

[Text] Heavy metals are present in surface water primarily in the dissolved and suspended states, which have different behaviors and degrees of toxicity to aquatic life. Accordingly the investigation of heavy metal pollution must deal not only with total quantities, but also with the proportionality between dissolved and suspended forms in order to give a relatively complete evaluation; this is one way of understanding the laws of migration and conversion of heavy metals.

There are two methods of studying the proportionality between dissolved and suspended elements. A relatively precise method is separate determination of filtered water samples and the residue on the filter; a more approximate method is comparison of analysis results for filtered and unfiltered water samples, which has the advantage of simplicity. We used the latter method for our studies and for investigation of water quality monitoring and evaluation.

1. Basic Situation

The Xiang River and Pearl River (Guangzhou section) are located in our country's central and southern subtropical zones respectively and have different water chemistries.

The Xiang River's chemistry is of the C_{II}^{Ca} and C_{III}^{Ca} types (according to the Alekhin classification method) with a pH of 7-8.0 and a total hardness (German scale) of 4-5. Its annual average sand content is 0.102-0.173 kg/m^3.

The sampling points included relatively pollution-free control points on the upper reaches of the river (source of the river at Xing'an in Guangxi, and Laofutou in Hunan), and polluted areas in its middle section (Hengyang, Zhuzhou, Xiangtan, Changsha) and lower section (Zhangshugang). A total of 23 samples were made at 12 sampling points along its 800-kilometer length.

The Guangzhou section of the Pearl River is in its lower, tidal section. Since it is affected by the tides, its chemical characteristic is a higher chlorine content than most fresh water, which varies considerably with the tides, an average sand content estimated as 0.20-0.40 kg/m^3, and a pH generally between 6.6 and 7.0.

2. Analytical Method

After the samples were taken they were immediately pressure- or vacuum-filtered. The filter membrane was first washed with acid; its hole size was 0.45 microns. After filtration, the filtrate was immediately acidified with 1-1.5 mg of concentrated nitric acid per kilogram and stored. The unified samples were stored after being acidified in the same manner.

The cadmium, copper and lead concentrations in the water were determined using a Daojin AA640-13 atomic absorption spectrometer. The zinc content was determined using a Y-2 atomic flame absorption spectrophotometer produced by the Beijing No2 Optical Instrument Plant.

3. Results and Discussion

Two sets of data on heavy metal concentrations in the filtered and unfiltered samples were obtained using the method described above. The metal concentrations in the filtered water were those for the dissolved state, although in reality they included mobile metal ions, metal complexed to organic and inorganic compounds, and metals on organic resins (with diameters smaller than 0.45 microns). The suspended metals were present in the following five geochemical states: 1. adsorbed; 2. bound to carbonate salts; 3. bound to iron and manganese oxides; 4. bound to organic matter; 5. in mineral crystal lattices. When the unfiltered sample was acidified with nitric acid, the pH was lowered from the neutral or weakly basic natural value to a strongly acidic figure of 2. Most of the adsorbed metals and those bound to carbonate salts went into solution, while a certain proportion of the metals bound to organic matter and iron and magnesium oxides were released, and only the metals present in mineral crystal lattices were unchanged. Our determinations for the unfiltered samples included both completely dissolved metals and some suspended metals.

Our results indicated that there was a clear difference in concentration between the filtered and unfiltered samples (confidence level < 0.05). Only a few heavy metal assays in a few of the unfiltered samples exceeded the levels specified for drinking water by the Ministry of Public Health in 1973. For example, the maximum cadmium concentration in the Xiang River was 0.015 micrograms per liter; the maximum lead concentrations for the Xiang River and Pearl River (Guangzhou section) were 0.49 micrograms per liter (at the Zhuzhou sewage outlet) and 0.13 micrograms per liter (Guangzhou) respectively. But the values determined for the filtered water samples (dissolved metals) did not exceed drinking water standards. Investigations indicate that dissolved heavy metals are more easily absorbed by aquatic life than suspended heavy metals, as well as being more toxic and more difficult to remove from the water.

The suspended metals can be removed by such common methods as filtration and flocculation. Accordingly the heavy metal pollution problems in the two river sections studied are easily solved, allowing the water to be used for drinking. It must be pointed out that this country's monitoring procedures involve determination of concentrations in unfiltered water, while many other countries determine concentrations in filtered water; each of the methods has its advantages and drawbacks, which will be discussed in detail below.

Correlation analysis indicates that the total cadmium, copper and lead concentrations in the Xiang River (for unfiltered samples, and likewise below) are very well correlated with the concentrations of the suspended metals, with r values of 0.99, 0.99 and 0.98 respectively. The correlations between the two states of lead, copper and zinc in the Guangzhou section of the Pearl River are also excellent, particularly for lead ($r = 0.98$), with somewhat lower values for copper and zinc ($r = 0.82$ and 0.70 respectively). Such a correlation was not found for cadmium in the Guangzhou section ($r = 0.27$).

The good correlations between total content and suspended state of a metal indicates that as the total concentration of the metal increases the content of the metal in the suspended state also increases and thus that the content of the metal in the dissolved state is relatively stable.

The regression coefficients for suspended metal and total metal content show quantitatively the increase in the former as the latter increases. The regression coefficients for suspended lead and total lead for the two rivers are close to 1 (1.025 and 1.06 respectively for the Xiang River and the Guangzhou section of the Pearl River), indicating that both river sections have a good purification capability for lead. Although the lead content is high in some polluted areas, the content of the dissolved metal remains relatively unaltered. The purification ability for copper is somewhat less: the regression coefficients for the Xiang River and the Guangzhou section of the Pearl River are 0.90 and 0.70 respectively. The smallest regression coefficients were found for cadmium in the Xiang River and zinc in the Guangzhou section of the Pearl river (0.5 in both cases). The regression coefficients for the heavy metals can be ordered as follows: Pb (Pearl River) ≈ Pb (Xiang River) > Cu (Xiang River) > Cu (Pearl River > Cd (Xiang River) ≈ Zn (Pearl River). This sequence is in agreement with the sequence of pollution levels with the exception of zinc in the Pearl River section, and accordingly the regression coefficients tend to increase as pollution levels increase.

To summarize the foregoing, both of the river sections studied have very strong self-purification capabilities for heavy metals, and most of the heavy metal pollutants are present in the suspended state; the concentrations of metals in the suspended state increase as total concentration increases, while the concentrations of the metals in the dissolved state are relatively stable and never exceed drinking water standards.

4. A Suggestion Regarding Water Quality Monitoring and Evaluation

The water quality monitoring method generally used in our country involves addition of the preservative and performance of the analysis on the water samples without filtering. The sample results are the totals of the more active portion of the suspended matter and the dissolved metals. Abroad, after the samples are collected they are immediately filtered (generally within 2 to 3 hours) through an 0.45 micron membrane filter, then afterwards the preservative is added and they are stored for analysis. The analysis results give only the concentration of metals in the dissolved state. The United States maximum permissible concentrations of toxic substances in surface water are for filtered water samples. For example, the U.S. surface water standard for public water supplies (1980) specifies that the concentrations of toxic substances refer to "components which cannot be removed by usual treatment methods." The water quality standards of the World Health Organization and of other countries are similar. The maximum concentrations of toxic substances in drinking water specified in the regulations issued by our country's Ministry of Public Health in 1973 are basically similar to those of other countries and the World Health Organizations, but Paragraph 2 of Article 11, Section 3 states that "the quantities of toxic substances in the untreated water must be in accordance with the water quality standards in Article 6 of these regulations." Since there is no amplification we can take this to refer to total content (concentration in unfiltered water samples). Accordingly, our country's standards appear identical to those of other countries but actually differ and are not comparable. But in practice, the standards will inevitably be compared, and accordingly this creates confusion in water quality evaluation.

The two types of standards have their strong points and weak points. The method used in our country is more comprehensive. Under certain conditions the active portion of the suspended material can go into solution. When the suspended material enters the digestive systems of fish, some of it may be adsorbed, and accordingly it must be taken into account in surface water quality evaluation. But it generally can be ignored in evaluating drinking water supplies. The main deficiency of this method is the difference in conditions for different water samples, which means that they are not comparable. Because there can be great variation in suspended matter between two rivers, two sections of the same river, or even samples taken from the same river section at different times, and there are considerable variations in the silt content of the samples, while the amount of preservative (nitric acid) added is the same, the quantities of acid acting on a unit amount of suspended matter are different, and the amount of metal released from suspension will vary accordingly, so that the results will not be comparable. The methods used abroad avoid this deficiency, but they completely ignore the concentration of suspended matter, so that they are one-sided, particularly in evaluating water for fisheries. In reality there are frequently water samples with rather high concentrations of trace metals, but with relatively low amounts in the dissolved state. For example, the total aluminum content and dissolved aluminum content of the Guangzhou section of the Pearl River are 47.9 and 28.9 micrograms per liter respectively in a clean area and 99.5 and 13.9 micrograms per liter in a polluted area. If we consider only the concentration of dissolved metal, we obtain the erroneous conclusions that the content is high in the nonpolluted area and low in the polluted area.

The resolution of this contradiction will require further investigation of water quality analysis, states of toxicants, and their toxicities to aquatic life. Until the problem is resolved, the best approach is to analyze both filtered and unfiltered samples, thereby making use of the strong points of both methods and making the results comparable with international figures.

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SOIL POLLUTION BY CHLORAL INVESTIGATED

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese Vol 3 No 1, 28 Feb 82 pp 47-49

[Article by Xu Ruiwei [1776 3843 5633], Li Xunguang [2621 0534 0342] and Jin Wei [7246 0251], Environmental Protection Office, Nanjing Soil Research Institute, CAS: "Damage to Peanut and Corn Crops from Chloral: An Investigation of a Pollution Incident in Wendeng County, Shandong"]

[Text] In the spring of 1980, Wendeng County, Shandong bought 2,000 tons of calcium superphosphate produced by a phosphate fertilizer plant in X County, Tianjin. This was used in early May as a base fertilizer for spring peanut and corn crops and as a dress for mulberry and fruit trees. Not long afterwards it was discovered that the crops in the fields where this fertilizer had been applied were abnormal, the leaves were shriveled, stuck together, wrinkled and curled, some stalks had withered, some of the plants had rotted seeds, and some shoots had died. At first it was erroneously thought that the cause was a plant disease or insect pest, and insect control measures were applied to the less affected plants, while those seriously affected were destroyed and the fields sown again, but the results were still poor, and in some places the same symptoms recurred on two or three subsequent sowings. The affected area was more than 40,000 mu and the affected crops were peanuts, soybeans, corn, paddy rice, sweet potatoes, radish, mulberry trees, fruit trees and the like. The seriously affected crops produced no harvest at all, and the economic damage was estimated at several million yuan, in addition to which the masses' production enthusiasm was dampened. In mid-July we made an analysis of phosphate fertilizer and soil samples from the area and discovered that the phosphate fertilizer contained 6,000 ppm of chloral residues, while the soil samples had a content of 10 ppm. In order to further investigate the reasons for damage to the crops and to determine possible effects on the fall wheat crop, in mid-September of the same year we went to Wendeng County for an on-the-spot investigation, involving visits to five brigades in three communes in which we observed and surveyed the symptoms shown by crops in some of the affected fields and analyzed 104 soil samples from some of the fields and the phosphate fertilizer remaining in the soil; in addition we sampled and analyzed leftover superphosphate from the same batch which the affected brigades in the province still had on hand. The Wendeng County Scientific and Technical Committee and the Agricultural Office also carried out experiments with peanut and corn plants grown in pots. The investigations and experiments showed that this was another case of serious pollution of agricultural land and poisoning of crops by chloral, and that the direct cause was the excessive chloral content of the phosphate fertilizer.

1. Chloral is an important intermediate in organic synthesis and is used to produce many chemical engineering products and agricultural pesticides. The process stage in which chloral is purified produces chloral-containing waste sulfuric acid and wastewater. Many local phosphate plants use this waste acid to produce calcium superphosphate, so that chloral is present in the fertilizers and accordingly is shipped to many locations. It was found that the starting material for this batch of fertilizer included waste acid from a chemical engineering plant in Tianjin which contained a rather large quantity of chloral; because the relevant departments did not understand the chloral could do serious harm to crops, they used the waste acid to manufacture fertilizer.

Chemical tests on many samples of leftover phosphate fertilizer taken from certain production teams in Wendeng County showed that when it was stored in heaps outdoors, after 4 months the fertilizer still contained 1,000-3,000 ppm of chloral, indicating that the original chloral content of this fertilizer was even higher and that when applied to crops it could not fail to do serious harm.

Our past research had made it clear that when acted upon by soil microorganisms, chloral can be converted rapidly into trichloroacetic acid, which has serious effects on crops and can remain in the soil for rather long periods (70-100 days). If supplementary sowings or new sowings are made during this period, the crops will continue to be damaged by the trichloroacetic acid. Environmental conditions (such as soil characteristics, precipitation, temperature and soil moisture) will affect its rate of degradation. In general, higher soil moisture, more rainfall and higher soil temperatures help in the degradation of chloral and toxic residues. When we analyzed two soil samples from Wendeng county in July, the chloral content was 10 ppm, indicating that the soil still contained considerable toxic residues from fertilizer application 2 months before and that the reason that resowings and supplementary sowings had been damaged was the dry weather, low air humidity and low soil moisture. In the middle of September we took 104 soil samples from the affected fields and detected no residues. This was because from July to September there had been high temperatures and several rainy spells, speeding up the decomposition of the chloral in the soil. We were able to predict that the fall sown crops would suffer no damage.

2. On-the-spot observations and surveys indicated that the main symptoms of crop damage in Wendeng County were serious suppression of growth, wrinkling, malformation and a deep green color in the leaves, swelling of stalk nodes, and dwarfing of the plants. These symptoms were in agreement with the known effects of chloral and trichloroacetic acid on crops, and were also in agreement with the pot culture experiments with chloral that had been performed by the Wendeng County Scientific and Technical Committee's laboratory. According to botanical documentation, chloral produces cell division disorders and disrupts the cells' polar structure and differentiation, producing abnormal structures, hindering normal development, and causing death in serious cases. Field investigations indicated that the degree of damage to

the plants was related to the quantity of fertilizer applied; application of 70 kg per mu already produced clear symptoms, while applications of 100-150 kg per mu destroyed most of the crop and there was still serious poisoning when the sowing was repeated. The specific symptoms shown by various crops are described below.

A. Peanuts. Seriously affected plants did not germinate; those moderately affected generally germinated but the plants were stunted, the new leaves stuck together, the leaf surface areas were small, the leaf material was thickened and the color was deep green, while stalk growth was seriously suppressed, the main root was fleshy and swollen and no flowers were produced. When the toxic effect was mild, the leaves were dark green, clumps of branches appeared at the base of the stalk, the main root was fleshy and swollen, the number of flowers was small, development of the pegs was retarded, there was little or no fruiting, most of the shells produced contained no seeds, and the plant was a whole had a languishing appearance.

B. Soybeans. Seriously affected soybeans did not germinate. Those affected to an intermediate degree showed serious leaf wrinkling and a dark green color, there was no flowering, and the entire plant had a languishing appearance. In those slightly affected, some of the leaves became wrinkled and all of the leaves were deep green, there were few flowers, and either no shells or empty shells were produced.

C. Corn. In seriously affected plants the growth of the seedlings was seriously suppressed, the new leaves were badly wrinkled or curled and the leaves were dark green and gradually withered, after which the plant itself withered and died.

In cases of moderate damage, the leaves were wrinkled and curled lengthwise into a tubular shape or transversely into a trumpet shape, the bases of the stalks were twisted and curved, the ears were small and deformed, development was retarded, there was little root development, and the plants were dwarfed. In mildly affected plants, the two first leaves stuck together in a funnel shape or rolled up longitudinally in a tubular shape, and the plants were dwarfed.

D. Paddy rice. In seriously affected plants, the central leaves were curled, shrunken, whitened and withered, or the blades and sheaths of the older leaves showed brown stripes or spots and gradually turned inward, finally dying. In moderately affected plants, growth was seriously suppressed and there was little tillering, the leaves were deep green with withered patches; there generally was no earing and the plants were dwarfed. In mildly affected plants, there was tillering but the ears were generally unproductive, there were many blighted grains, and the yield was greatly decreased.

E. Sweet potatoes. In seriously affected plants, growth stopped in the seedling stage, or the leaves were wrinkled, shrunken, thickened, and dark green, the stalks were fleshy and swollen at the nodes, the leaf stalks were short, the tubers were small and thin, and the vines were sparse and short. In mildly affected plants, the leaves were wrinkled, shrunken and deep green and yields were greatly diminished.

F. Radishes. The leaves were wrinkled and shrunken, and plant and root development were suppressed.

G. Apple trees. In the initial stage of poisoning, most of the leaves fell, and those which remained curved downward, while fresh leaves were wrinkled and shrunken and there were few fruits.

H. Mulberry trees. In seriously affected mulberry trees, most of the leaves were wrinked and shrunken and sharply pointed and badly curled. Their color was deep green and their longitudinal and transverse growth was seriously suppressed, while the entire tree was stunted and clumps of new branches appeared on branches and small twigs. In mildly affected trees, the new leaves showed relatively marked wrinkling and were deep green. The damaged and wrinkled leaves caused the death of fourth-stage silkworms fed on them.

3. In the past 10 years there has been case after case of serious chloral pollution of the environment and damage to agricultural production. In the early 1970's there were many instances in which chloral polluted water sources and harmed large wheat acreages in Beijing, Tianjin, Zhengzhou, Xi'an and Zibo. In 1974 an area of more than 60,000 mu was polluted in the Ji Canal area of Tianjin, with a loss of 10 million jin of grain. In the mid 1970's, because many local phosphate plants could not get an adequate supply of regular sulfuric acid, they used chloral-containing waste sulfuric acid as a starting material, producing chloral-polluted fertilizer which harmed large crop acreages in Zhejiang, Jiangsu, Shandong, Liaoning and Hebei. For example, use of this polluted fertilizer in Tai County, Jiangsu in November 1979 caused damage to 6,000 mu of wheat and a loss of a million jin of grain. Such instances of pollution are widespread in our country and the threat to agricultural production is great, so that it should be taken seriously by the relevant departments.

Utilizing the three wastes and "changing waste into treasure" is unquestionably a correct policy, but stress must be laid on a scientific approach and blind action must be stopped. Chloral-containing wastewater and waste acid must be treated to decrease the chloral content to permissible levels before it may be discharged or used. When waste acid is used to produce phosphate fertilizer, the starting material must be stringently tested and the amounts of chloral and other harmful substances must be monitored. Units which knowingly discharge polluted water or sell waste acid or fertilize products containing excessive quantities of chloral must have their responsibility determined in accordance with the state environmental protection law.

Much investigation has been conducted in this country on the nature of chloral as a pollutant, the character of the pollution process, symptoms of crop damage and protective measures, and many results have been obtained. We hope that the cognizant departments will organize manpower, carry out widespread propaganda and take effective measures to prevent continued occurrence of such incidents.

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RADIATION POLLUTION FROM COAL STUDIED

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[Article by Ye Chongkai [0673 1504 7030], Li Wangsheng [2621 2489 3932], Qian Weicheng [6929 0143 2052], Zhou Wenqin [0719 2429 3832] and Liu Xiaosong [0491 2556 2646], Research Institute of Industrial Health, Jiangxi Province: "Radiation Pollution of the Environment by Coal"]

[Text] The burning of coal is causing serious environmental pollution. The chemical and biological damage caused by wastes from coal is now rather well understood, but the harm done to the environment by radioactive pollution has not yet attracted widespread concern. There is a dearth of data and only a small literature on radioactive pollution resulting from coal. In this article a determination of the radioactive content of coal and on-the-spot surveys of coal extracting and coal-burning units are used to cast light on radioactive pollution caused by coal.

1. Determination of the Radioactive Components of Coal

Sources of data. The raw coal samples were taken from Anyuan coal, Juyuan coal and Qingshan coal from the Pingxiang coal mine in Jiangxi, which has been in operation for nearly 100 years, and from Fengcheng coal and Xinhua coal from another major coal field in Jiangxi. The coal samples were collected and made available to us by the mines' production quality control departments using a method described in the literature. A method from the literature was also used to eliminate extraneous moisture and to prepare dry coal as called for by the standards.

Method of determining content of radioactive substances. The dried coal samples were reduced to coal ash. Samples weighing 0.5 g were subjected to radiochemical separation and the purified samples were made into beads with sodium fluoride and the fluorescence method was used to determine the uranium content. Two-gram samples of the ash were subjected to radiochemical separation and purification and a radonthorium analyzer was used to determine radium-226 content by the radon method.

The results indicate that there are slight differences in the uranium and radium-226 contents of raw coals from the five major Jiangxi coal mines; the uranium content range was 0.89-4.40 micrograms per gram of coal with an average level of 2.40±0.66 micrograms per gram; the radium content range was 0.28-1.38 picocuries per gram of coal and the average was 0.92±0.18 picocuries per gram. The variation in radium-226 content among the five coals did not exceed an order of magnitude. These values were similar to the uranium and radium-226 contents of reported in U.S. and British coals; the uranium content of U.S. Illinois coal was 1.5±0.93 x 10^{-6} g/gram of coal, that of western U.S. coal 1.2±0.65 x 10^{-6} g/gram of coal, that of Appalachian coal 1.5±0.73 x 10^{-6} g/gram of coal, and the radium content of Biliedian [phonetic] coal (UK) was 0.05-0.3 x 10^{-12} curies/gram. The concentration of radioactive matter in coal varies with the nature of the starting material involved in the coalification process and the complex processes of percolation and deposition of radioactive elements among the various buried strata. Because the starting materials for the coals differed, and the plant detritus accumulated under different conditions and the strata were subjected to differing underground water regimes and underwent complex physical, chemical and geological development, there are variations in the radioactivity content of the coals. Some coals associated with natural uranium ores have high uranium concentrations, even to the point of being extractable uranium ores; and the coal ash and cinders remaining after the combustion of some coals also have a high uranium content.

Natural uranium occurs in the environment in the hexavalent state. It is amphoteric; under acidic conditions it occurs as easily-soluble uranyl cations, while under basic conditions it occurs in difficulty soluble diuranate anions. In general, all environments in which uranium occurs also contain radium. Subsurface water in some mining districts has a rather high radium content, and the soluble radium salts ($Ra(OH)_2$, $RaCl_2$, $RaBr_2$, $Ra(NO_3)_2$ and the like) can be eroded by subsurface water and dispersed in natural waters. But what is the solubility of uranium and radium contained in coal? We carried out the following investigation of this question.

Under laboratory conditions, 200 g of standard dried raw coal was extracted with deionized water for 10 days in a crucible, and all of the extraction water was filtered and a uranium and radium-226 determination made.

The results indicated that the extraction liquids from the five varieties of Jiangxi coal were weakly acidic; uranium and radium-226 were found in all of them, but the amounts extracted were rather low. This indicates that like natural uranium and radium, the uranium and radium in the coal are soluble to some degree under acidic conditions; this is an important datum with regard to radioactive pollution of water sources by raw coal.

We also determined the solubility of uranium and radium in coal ash.

The results indicated that the extraction fluid was also weakly acidic, and the quantities of uranium and radium-226 which it contained were slightly higher than the extract from the raw coal, indicating that the uranium and radium salts which remained after removal of the organic matter from coal by combustion were readily soluble, and as a result wastewater that had been in contact with coal ash has a relatively high uranium and radium content.

But in order to determine the relationship between the length of immersion and the quantities extracted we carried out comparative tests.

These tests indicated that the percentage of the radium in coal and coal ash that was extracted was somewhat related to the time of immersion; 3 days or more was required for raw coal and 10 days or more with coal ash before a relatively large proportion was extracted. But after 30 days soaking there was no apparent further increase in the quantities extracted, indicating that soaking of raw coal for 3 to 10 days and of coal ash for 10 to 30 days resulted in solution of virtually all the soluble radium salts. Regardless of the soaking time, the percentage extracted from the ash was nearly 10 times as high as that extracted from raw coal, which is the main reason why water contaminated by coal ash produces radioactive pollution of the environment.

2. Surveys of Radioactive Pollution of the Environment by Coal.

Radioactive pollution of the environment by coal is produced primarily by wastewater from water-curtain dust removal of ash in smokestacks and water from the washing of furnace ash, by coal-pit water and coal classification water from mines, and by water percolating from coal stored outdoors which is wet by precipitation. We conducted uranium and radium-226 determinations of wastewater from coal-burning electric power plants and from a coal classification plant. Uranium was determined in a 1-liter sample of water, and radium-226 in a 10-liter sample. Surface water samples were used as controls.

The results indicated that both coal-ash wastewater and coal classification wastewater were capable of producing radioactive pollution of environmental water sources. The uranium content of the wastewater from the power plant was as high as $7.0 \pm 0.70 \times 10^{-6}$ g/liter, about 20 times as high as for the control sample; the radium-226 content was $2.52 \pm 0.75 \times 10^{-13}$ curies/liter, about 15 times as high as for the control sample. The power plant in question discharges 9,600 tons of wastewater a day, and accordingly it is estimated that it discharges 67.2 grams of uranium a day or 24.5 kg a year and 24.2×10^{-7} curies of radium-226 a day or 8.8×10^{-4} curies a year into the river. The uranium content of the coal classification plant wastewater was $1.86 \pm 0.15 \times 10^{-6}$ g/liter, about 6 times as high as in the control sample, and the radium-226 content was $2.24 \pm 0.17 \times 10^{-13}$ curies/liter, about 13 times as high as in the control sample. Since this plant discharges 300 tons of wastewater a day, it is estimated that it discharges 0.56 grams of uranium a day or 204 grams of uranium a year and 6.72×10^{-8} curies of radium-226 a day or 2.5×10^{-5} curies a year into the local streams. With this continuing discharge of wastewater into streams, radioactive pollution of water sources cannot be ignored.

In the power plant's coal storage yard, the uranium content of acidic (pH 4-5) water taken from the most surrounding the coal pile was 1.06×10^{-5} g/liter, about 32 times as high as for the control sample (0.33×10^{-6} g/liter), while the radium-226 content was $1.46 \pm 0.02 \times 10^{-13}$ curies per liter, about an order of magnitude higher than in the control sample.

The uranium content of well water in the vicinity of a certain coal mine (the well water at the classification plant is used in classification) was $1.20 \pm 0.10 \times 10^{-6}$ g/liter and the radium-226 content was $1.18 \pm 0.3 \times 10^{-13}$ curies per liter, both of these values being higher than for the control samples.

The degree of radioactive pollution of water sources by coal does not exceed state standards (0.1 mg/liter for uranium and 3×10^{-11} curies/liter for radium-226), but if wastewater is continuously discharged into the streams over a long period, it must inevitably degrade water quality and produce pollution.

3. Survey of Radioactive Pollution of the Atmosphere by Coal

Radioactive pollution of the atmosphere by coal results primarily from coal gas discharged from the smokestacks of plants burning coal and from the use of fire to dry coal in classification plants, as well as from smoke and ash emitted during household coal burning.

We surveyed radioactive pollution of the surrounding air by smoke and ash emitted from the smokestacks of a coal-fired power plant. The method was as follows. A point 2500 meters downwind of the smokestack was used as the polluted area sampling point (the maximum concentration of toxic gases is located at a horizontal distance 25-35 times the height of the smokestack). A location 5,000 meters upwind of the smokestack was taken as a nonpolluted control sampling point. This was located in suburbs or in the countryside with no smokestacks nearby. It also was free interference from city smoke. When weather conditions were essentially the same, sampling was carried out every day at 9-10 AM; the atmospheric samples were taken at the same time in the polluted and nonpolluted regions at a height 1.5 m from the ground (i.e. the height of the human respiratory apparatus), and the radioactive content of randon products, which are decay products of uranium and radium, was determined.

The results indicated that the radon product radioactivity concentration was higher in the downwind polluted region than in the upwind control region. The average concentration in the polluted region was 511.2 ± 68.8 MeV/liter, about twice as high as in the control area (average 286.8 ± 14.3 MeV/liter). The difference between the measurements in the polluted and nonpolluted regions was clearly significant, with a confidence limit of $p < 0.01$. In addition, the concentration in the polluted area exceeded the radioactivity protection standard for the general population, i.e. 400 MeV/liter. The readings in the control location were relatively constant, representing the natural background level. In the polluted area there were slight variations depending on wind speed. All readings in the polluted area were higher than in the control region, confirming that they resulted from pollution by the power plant. Because the uranium and radium breakdown products in coal gas are capable of being discharged from the smokestack into the air in the form of a radioactive aerosol, they can enter the body through the respiratory organs. An adult breathes approximately 20,000 liters of air a day, and a person in the polluted area would inhale a considerable quantity of radon and radon products. Of the environmental factors currently thought to be related to lung cancer, most attention is focused on three, namely smoking, atmospheric pollution, and occupations involving dust and toxic gases. The harm which coal smoke and gas cause to the human respiratory apparatus has been confirmed.

In addition to atmospheric pollution produced by industrially used coal, the local air pollution produced by domestically used coal should also be considered; the small stoves dispersed through a multitude of households and the short chimneys in residential areas are an important source of pollution by coal ash. It is estimated that a ton of coal in dispersed domestic use produces 1-2 times more smoke and ash than a ton in concentrated industrial use and 3-4 times as much flyash, and in winter in particular, more coal is used for home heating than in industry and large quantities of coal dust fill the air of the residential districts, causing great harm. We took random samples in certain residential districts, determining the radon product content of the air in kitchens and bedrooms, and made the same determination for the outside air as a control.

The results indicated that the radon product concentration in residences was in the following sequence: kitchen > bedroom > outdoors. The kitchens and certain bedrooms had radon product concentrations in the air which exceeded the permissible level for the general public (400 MeV/liter). The main reason for the high concentration of radon products was the use of coal for cooking and the fact that housing construction did not meet residential ventilation requirements.

4. Survey of Environmental Radioactive Pollution Caused by Coal Ash and Cinders

Among coal wastes, coal ash and cinders are a major source of radioactive pollution. Currently, in the process of comprehensive waste prevention and recovery, new uses have been found for ash and cinders. For example, they are used as a starting material in the production of cinder block and cinder concrete; coal ash and cinders with high potassium, calcium, phosphorus and magnesium content may also be applied directly to agricultural land as a fertilizer. But the radioactive materials in ash and cinders have not been removed and are disseminated into the environment by the manufactured products. Under the action of water, some of the radioactive materials contained in ash and cinders or products made from them can be dissolved, for water is an excellent solvent. The ash can pollute not only water but the air as well, because the radioactive decay products radon and thoron [radon-220] can be dispersed into the atmosphere. We determined the concentrations of uranium and radium-226 in coal ash and in cinders.

There was some differences in the uranium and radium-226 contents of cinders and ash from the five types of raw Jiangxi coal. The average uranium content of the ash and cinders was $2.48 \pm 1.21 \times 10^{-5}$ g/per gram of ash, while the radium-226 content averaged $3.89 \pm 0.5 \times 10^{-12}$ curies per gram of ash. The latter figure is in full agreement with the radium-226 value for Appalachian coal ash of $3.8 \pm 0.4 \times 10^{-12}$ curies per gram given by Eisenbud.

5. Conclusions

The toxicity produced by radioactive pollution of the environment originating in coal is many-sided. The radioactive substances in coal act on the human body from the biosphere by many routes. The biologically most significant radioactive compounds in coal are uranium and radium and their decay products radon and the radon products polonium-210 and lead-210.

In the book "The Danger of Radioactivity in the Environment," J.G. Gofman points out that in ionizing radiation almost certainly causes various types of human cancers. Twenty years' research indicates that if radioactive energy encounters a sensitive cell it can produce cancer in any organ. The question of how much harm radioactive pollution of the environment caused by coal may do by exposing the human body to radioactive substances is an extremely complex one: it is the question of the harm done to the human body by small doses of ionizing radiation. There is as yet insufficient information to reach a correct conclusion on this question.

There is no agreement on whether there is a threshold dose above which ionizing radiation poses a danger of malignancy or on what the effect of such a dose might be. For the purpose of radiation protection, the International Radiation Protection Committee has adopted the hypothesis that there is a linear relationship between dose and effect and no threshold dose, and that the dose effect is cumulative. Accordingly our investigation of radioactive pollution of the environment caused by coal has extremely great biological and public health significance.

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ATMOSPHERIC CAPACITY FOR FLUORINE COMPOUNDS INVESTIGATED

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[Article by Wan Guojiang [8001 0948 3068] and Xu Yifang [1776 5030 5364], Research Institute of Geochemistry, CAS: "An Analysis of the Environmental Capacity for Atmospheric Fluorine in China"*]

[Text] The basic goal of research on the geochemical behavior of harmful substances in the environment is to elucidate their evolution in the environment and provide basic data for effective control of environmental quality. Differences in natural environmental conditions complicate the solution of this problem, but regional variations in natural environmental conditions follow traceable patterns, making environmental forecasting possible to some extent. Accordingly, we propose to study the manmade discharge of harmful substances into specific environments in order to determine their environmental geochemical behavior and local differences in natural environments, and to use specific surveys to find the capacities for various environmental materials under various regional environmental conditions and conduct an analysis of these capacities as a precondition for a comprehensive delineation of regions.

Industrial fluorine compounds stand out in terms of both the quantities discharged and the harm they do to the environment. Accordingly, an investigation of the environmental capacities for industrial fluorine compounds has become the first stage of our work.

1. Discharges of Fluorine into the Atmosphere and Their Geochemical Behavior

The main types of manmade discharges of fluorine into the environment result from thermal decomposition, acidic decomposition, hydrolysis and mechanical dispersion.

A considerable body of research makes it clear that although discharge of fluorine ions into water environments products a cumulative effect under natural background conditions, regional environmental variation is not of

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*This paper was prepared under the guidance of Mr Liu Dongsheng [0491 2639 3932], Comrade Yu Zhicheng [0151 1807 2052] helped prepare the graphics, and Comrade Sheng Naixian [4141 0035 6343] gave enthusiastic assistance; we take this occasion of thanking them.

major importance. Although fluorine in silt and soil participates to some extent in biochemical processes, because it is present in crystal lattices and in adsorbed form, it is environmentally rather inert and does not play a major role in environmental fluorine variations; but gaseous fluorine compounds such as HF and SiF_4, which can be dispersed by the air, have a wide range of effects and are highly toxic, have a rather pronounced effect on the human body and biological organisms, so that they occupy a special place in geochemical analysis of variations in environmental fluorine. Accordingly, this analysis must first take account of variations in fluorine in the atmospheric environment, and the highly toxic HF and SiF_4 are the gaseous fluorine compounds whose occurrence must be particularly considered.

Gaseous molecules of hydrogen fluoride are stable but polymerize easily, forming chain polymers such as $(HF)_2$, $(HF)_3$ and the like. At 20° and a pressure of 745 mm of mercury, 80 percent of HF molecules exist in this polymerized form. Hydrogen fluoride is readily soluble in water (at atmospheric pressure and 20°C the solubility is 35.3 percent), but because of its low ionizability, it is not highly acidic; when silicon tetrafluoride encounters water it decomposes into silicid acid and fluorosilicic acid. This characteristic dictates that during atmospheric precipitation both HF and SiF_4 easily pass from the atmosphere to the water environment, which lessens their environmental variability and harmfulness and tends to remove them.

2. Analysis of the Variability of Environmental Quality in Terms of Fluorine

We estimated emission rates (kg/hour or tons/year) and calculating the percentages of global emissions recorded by individual research units; when we proceeded to a geochemical analysis of the environmental avariability caused by industrial fluorine emissions, we took account of the following points.

1. State of occurrence. We considered that the investigation should focus on environmental conditions and states of occurrence of the highly toxic, large-environmental-effect gaseous compounds such as HF and SiF_4.

3. Form of emission. The size of the effect of spatial location of the emission point and height of the smokestack on environmental effect is correlated with environmental effect and a conversion is made to effective discharge for low smokestacks.

4. The effect of local atmospheric diffusion conditions. Atmospheric diffusion and dilution decrease the effective concentrations of harmful substances.

F.A. Gifford et al. hypothesize that atmospheric pollutant concentration is inversely proportional to average wind speed; W.O. Shults et al. hypothesize an index (either individual indices for individual compounds or an overall index) which, like the pollution concentration, should be inversely proportional to wind speed. Accordingly, we can use these relationships in analyzing the environmental variation in produced by gaseous fluorine compounds.

5. The effect of local environmental pollutant degradation conditions. As indicated by the analysis made above, local breakdown of HF and SiF_4 is closely related to precipitation, and accordingly we assume that the local fluorine environmental variation coefficient is inversely proportional to the local proportion of global precipitation.

On the basis of the foregoing, we set up the environmental variation coefficient P for a unit's fluorine measurements:

$$P = f(\rho, k_x, k_d, k_h) = \lg(\rho k_x / k_d k_h)^{\frac{1}{2}}$$

Here ρ is the proportion of total environmental fluorine accounted for by the unit's measurement of fluorine discharge (i.e. the ratio of the local discharge rate to the global discharge rate); k_x is the coefficient of effective fluorine discharge for the unit (i.e. the ratio of the adjusted discharge rate, with allowance for type of emission, state of occurrence and type of discharge, to the raw discharge rate); k_d is the global gradient of the atmospheric diffusion capability for the location in question (i.e. the ratio of the average wind speed for that location to the worldwide average continental precipitation); and P is the environmental variation coefficient obtained for the research unit in question through geochemical analysis; by substituting the research unit's relevant data into the formula, the fluorine environmental variation coefficient can be calculated.

3. Correlation Analysis of Fluorine Environmental Variation Coefficient

The degree of environmental harm done by pollution may be reflected in biochemical indicators in plants and animals, in human health, or in economic losses. In general terms, the environmental quality variation coefficient is positively correlated with the degree of harm, but the nature of the effect will vary with the nature of the specific area in question (agricultural, livestock raising, residential and the like). The case is similar for economic losses. But in areas which do not differ greatly in their degree of economic development, economic losses should also be correlated with the environmental quality variation index.

Can the fluorine environmental variation indices obtained on the basis of the geochemical analysis described above reflect the real degree of pollution?

An analysis of the correlation between the environmental variation indices for 10 fluorine emitting plants in certain districts and the environmental harm produced gave a correlation coefficient for the environmental variation index P and the degree of environmental harm Y equal to $r = 0.835$.

Using the Fisher Z transformation method we obtain $t = 3.19 > 1.96$.

Thus there is a clear positive correlation between the fluorine environmental variation index P and the degree of environmental harm Y. The regression formula is $Y = 1.41 P + 0.38$.

This is a linear empirical formula for the relationship between the fluorine environmental variation index and the degree of environmental harm.

The point scatter and regression line are shown in Fig. 1.

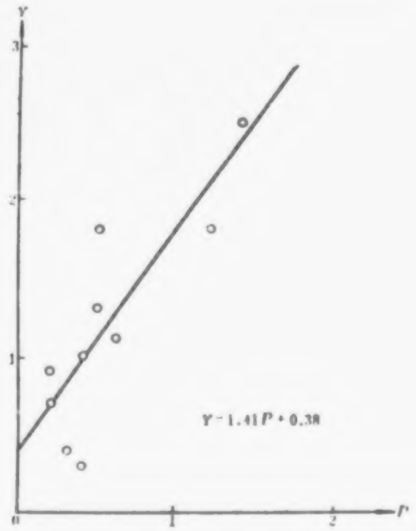

Fig. 1. Point scatter and regression line for relationship between degree of environmental harm and environmental variation index.

These results indicate that the environmental variation index model proposed in this article is fully usable to describe the degree of fluorine pollution. Thus we can use various units' fluorine environmental variation indices to draw a nationwide fluorine pollution map. Comparing the environmental variation index obtained from geochemical analysis of environmental variation with the ordinary environmental quality index obtained from monitoring data, although they both can be used to describe the real degree of pollution, the environmental quality index must be worked out from a large amount of monitoring data, while the environmental variation index is based only on calculations with discharge quantities and use of the diffusion and purification laws for harmful substances under specific environmental conditions. The comparison indicates that the method described here not only is applicable to estimating the degree of pollution resulting from a given plant's emissions, but should have even greater real significance in analyzing environmental capacities, developing rational regional emissions standards, and rational geographical distribution of industry.

4. Industrial Atmospheric Fluorine Environmental Capacity Regions of China

Using the empirical formula given above, we not only can forecast the degree of harm done by fluorine emission sources, but also are better equipped to investigate the fluorine capacity under various environmental conditions.

If on the Y-P regression formula the degree of environmental pollution Y is set at zero, we obtain the environmental variation coefficient which produces no environmental harm (the environmental critical value), which is -0.27.

We understand the significance of environmental capacity as being the maximum permissible rate of discharge of a given harmful substance by a given source in a given environment which, because of environmental effects, will produce no environmental harm. Obviously the environmental capacities for a given substance in different areas will vary with their environmental conditions.

Using the environmental conditions of different regions of our country, and taking the environmental critical value of -0.27 for industrial emissions of fluorine our country as a base figure, we calculated the permissible discharge rates for 486 areas of our country (in kg/hour). After constructing a map, we took account of differences in environmental geological conditions and interpolated to construct isometric lines, obtaining a map of industrial fluorine atmospheric environmental capacity regions.

Using the isometric lines we can divide the country into five fluorine capacity regions.

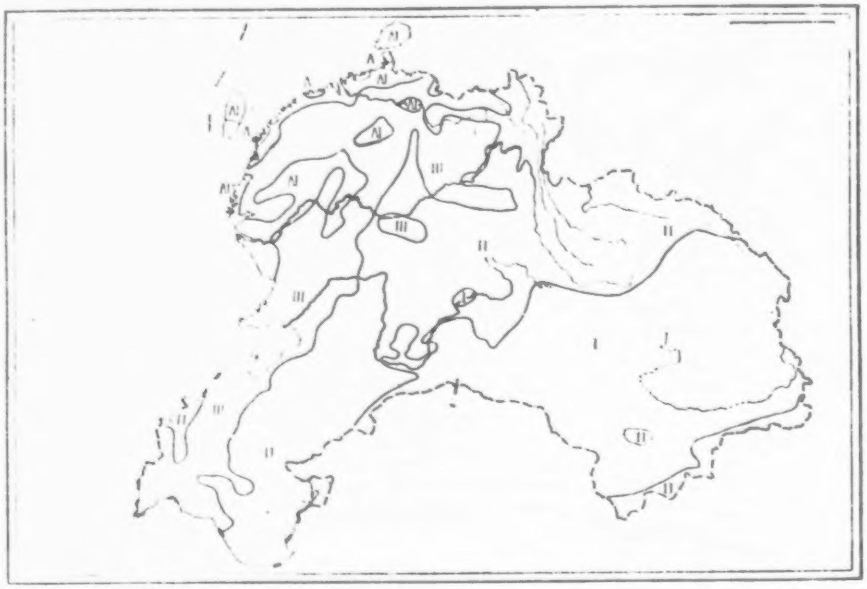

Fig. 2. Atmospheric fluorine environmental capacity regions of China

The fluorine capacity map furnishes basic data for rational geographical distribution of fluorine-emitting enterprises, for setting control requirements for fluorine-emitting enterprises, and for forecasting the extent of fluorine pollution.

In using the atmospheric fluorine environmental regions we have derived we must take account of several factors.

1. This division into regions was based on summary environmental data, but because of local variations in environmental geological conditions, there may be small low-capacity areas in high-capacity regions and small high-capacity areas in low-capacity regions. Accordingly, when laying down principles for the siting of fluorine-emitting enterprises, we must take full account of the effect of specific local environmental conditions on the capability for diffusion purification of atmospheric fluorine emissions.

2. The suitability of environmental conditions for construction of fluorine-emitting enterprises is not fixed and unchanging; if setting relatively large emissions proves to be consonant with environmental capacities, fluorine-emitting enterprises may be built in low-capacity regions as well. Conversely, there will be some environmental harm even in high-capacity regions.

3. This division into regions is based solely on environmental geological considerations and does not take account of the degree of development of human economic activity; when it is used for regions where environmental harm can be ignored, the division into environmental capacity regions need not be a constraint.

4. When this division into regions is used in defining local discharge standards for different regions, the following formula may be used for calculations:

$$Q_{h\ \mathrm{standard}} = QH^2 \times 10^{-3},$$

where $Q_{h\ \mathrm{standard}}$ is the emission standard for a given elevation (kg/hour), Q is the environmental capacity for the region in question (kg/hour), and H is the elevation at which emission takes place (meters).

8480
CSO: 5000/4034

ENVIRONMENTAL PROTECTION WORK AT CHEMICAL FIBERS PLANT DESCRIBED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 1, 1982 pp 9-10

[Article by Shanghai No 11 Chemical Fibers Plant: "How Should We Approach Environmental Protection Management?"]

[Text] The Shanghai No 11 Chemical Fibers Plant produces resin-impregnated nylon 6 tire cord fabric; its annual output is 5,400 tons, and it consumes nearly 6,000 tons of caprolactam annually, as well as almost 700 tons of the main accessory materials, oils, resins, anti-aging additives, adipic acid and the like. Its entire production activity includes 13 processes, 10 of which produce wastes. Its output of toxic or harmful wastewater is 115.6 tons a day, of which 112.6 tons per day, or 97.4 percent of the total, has been treated and meets discharge standards. Waste gas discharges amount to 2.036 million cubic meters a day, almost all of which is treated. The caprolactam and chromic acid and other substances which they contain are recovered and used, and an annual total of 241.86 tons of solid waste, all treated, is produced. In 1980 all environmental protection work improved compared with 1979. The proportion of discharged wastewater meeting standards (PH) was 100 percent, oxygen consumption (OC) was 97.22 percent, the average caprolactam content of waste gas was 9.48 mg/m^3, slightly more than half the 1979 figure, and the percentage of gas discharged that met standards was 87.42 percent, up 13.27 percent from 1979. At the same time, 306.85 tons of caprolactam was recovered from extraction wastewater and reused as a raw material; it had a value of 2.3 million yuan and saved US $300,000 in foreign exchange (because all of the starting materials our plant uses are imported). In 1980 we were cited as one of Shanghai's most advanced units in environmental protection. Our insights on effective environmental protection are described below.

1. Improve Understanding, Strengthen Leadership

By publicizing and studying the environmental law, we gave all plant employees some understanding of it; while working hard on production they also did effective work in waste treatment and environmental protection. In March and April 1981, in accordance with our plant's specific situation, we set aside a period of time for concentrated environmental propaganda and for presentation of our own plant's pollution control situation and related knowledge. Thus everyone had a basis of knowledge for further performance of environmental protection work in the plant. On this basis we strengthened leadership and the plant's headquarters set up an environmental leadership group headed by a deputy plant director whose duties had included responsibility for environmental work. The group was composed of the shop superintendents and relevant personnel from the medical office, the labor protection unit, the equipment department, the technical department, the research office, the supply and marketing unit and the general services department. The research office is a specialized environmental protection department which has three technical personnel specifically engaged in environmental-protection scientific work in addition to two monitoring personnel who carry on regular monitoring and crash monitoring of new projects. In addition, all of the shops set up waste control groups for all special projects. The plant's environmental protection leadership group meets once a month and disseminates and implements environmental policies and directives of the state and the higher-level organizations, monitors implementation of resolutions from the previous meetings, analyzes the plant's environmental protection situation, and drafts approaches for the next stage of work; the plant director is responsible for overall arrangements and decisions on matters brought up at the meetings, and he designates departments and organizes personnel to deal with problems by set deadlines; and monitoring personnel are assigned schedules for monitoring pollution control performance. The result is that waste control work is all carried out systematically and in planned fashion.

2. Investigation to Determine the Situation

In order to gain a full knowledge of the plant's pollution situation, all wastewater flow in the plant was traced and maps of underground piping were used to find the four main wastewater discharge outlets. Then water quality surveys were made of 19 wastewater lines which fed the discharge outlets, a comprehensive analysis was made, a water quality breakdown was obtained, and the water volumes and actual pollution levels were determined in order to ascertain which wastes could be discharged, which were only slightly polluted, and which were seriously polluted. Finally, using the water quality and quantity data and taking note of the plant's specific situation, rational measures were adopted and comprehensive utilization approaches found.

3. Use of the Principle that the Units Producing Pollution Treat It in Order to Achieve Effective Treatment and Comprehensive Utilization

In order to implement the treatment measures, we used dispersed treatment and applied the principle that the unit producing the pollution treats it; regardless of the quantity or degree of pollution, all waste had to be treated where it originated. Focusing primarily on the pollution-producing shops and departments, the research office environmental protection group assigned or selected pollution control projects. After the measures were decided on, their application and management were turned over to the shops. The emulsifier used with machine tools in the maintenance shop had an oxygen consumption as high as 20,000 mg/liter. Research led to the following approach: iron fragments and impurities were allowed to settle from the emulsifier, after which it was concentrated, purified, filtered and discharged. This discharge fluid met the standard with an oxygen content under 50 mg/liter, and equipment has now been built by the plant to treat the emulsifier once a month.

An energetic effort was made to develop methods for comprehensive utilization of wastewater. For example, comprehensive use was made of the shops' melt spinning furnace coolant water, which amounted to 70-100 kg a day, and whose main components were emulsifier and caprolactam monomer; the oxygen consumption value was very high and it could not be discharged, so it was concentrated, the oil separated from the water, and adsorption, recrystallization and distillation employed to obtain caprolactam equivalent in quality to the imported product, which could be sold. In addition, to use the polyethylene sacks in which the caprolactam was packaged, they were shredded and the caprolactam residue rinsed away. Some 600 sacks a day were used, and the wash water amounted to 100 kg a day. This had a content of 2 percent caprolactam and could not be discharged, but evaporation and distillation were used to recover it. The dining hall dishwater had a chemical oxygen demand (COD) greater than 10,000 mg/liter, and with the cooperation of the Donghai Fats and Oils Plant a well-type oil separating pool was constructed. Following separation in this pool, the wastewater met discharge standards. The waste oil was regularly skimmed off and sold for 0.10 yuan a kilogram. Each ton could be made into 5,463 bars of soap. This both decreased pollution and increased profits.

4. Strengthening Management and Research

While assigning and monitoring the performance of production plans, we also assign and monitor the performance of waste treatment plans and allocate waste treatment work down to the brigade level. Our plant monitors discharge water at the four main discharge outlets 8 times a month and monitors the 23 waste gas discharge points twice a month. The measurement results are posted on 25 bulletin boards in the shops, and in addition the various shops are rated on a scale of 1 to 100 in a bonus competition. The shops also develop methods for evaluating shifts, brigades and individuals. Maintenance cycles have been developed for waste treatment equipment, and this equipment is regularly serviced and overhauled. Equipment standards have been developed and are regularly checked, and this equipment is cared for along with process equipment. In addition, we have persistently carried out the "three simultaneous activities"; for example, treatment of wastewater from the chromium plating shop and treatment of waste gas from the plastics molding shop were handled in this way: the required equipment was designed, built and put into production concurrently with shop reconstruction. The Cr^{6+} content of the chrome plating wastewater was initially 100-300 mg/liter, but following installation of a titanium tube evaporator, the condensed water had a Cr^{6+} content of 0.005-0.01 mg/liter, meeting discharge standards. The research laboratory organized groups to deal with certain wastes that initially could not be treated. For example, the wastewater from the resin impregnation waste tank had a phenol content 10-20 times the standard and an oxygen consumption of 2,000-3,000 mg/liter, and particulate matter and color were also several times higher than permitted by the standards. About 3 tons of this water is produced each day. Abroad it is condensed and filtered, then spray aerated. Our plant had no area for aeration, but it successfully adopted a condensation method. Following treatment, the PH, OC, phenol content and particulate content all were in accord with discharge standards. We have built treatment equipment for this process.

Overall, although our plant is now treating virtually all wastes and discharges meet standards, discharge quality is still not steady, and the rate of compliance with the standard is still not fully 100 percent; the air in the shops is still somewhat turbid, and we have just begun to deal with noise. All of these problems await energetic resolution in the future.

8480
CSO: 5000/4025

SHANXI ENVIRONMENTAL POLLUTION AERIAL SURVEY MARKS START OF 5-YEAR PROJECT

Taiyuan SHANXI RIBAO in Chinese 15 Feb 82 p 1

[Article: "To Provide Scientific Data for Formulation of Regulations Concerning Treatment of Environmental Pollution of This Province, First Environmental Pollution Aerial Survey Conducted in Shanxi"]

[Text] Xinhua Taiyuan, 13 February: Yesterday, three special purpose aircraft flew over Taiyuan and its vicinity within an area of some 480 square kilometers and conducted six environmental pollution aerial surveys at various altitudes. At the same time, 41 ground observation stations scattered all over the city and its vicinity and six meteorological observation stations conducted multi-disciplinary general survey in close coordination with the aerial survey.

This constituted the first day's activities of an aerial survey over Taiyuan which is to last 10 days as part of a large-scale scientific research project entitled "Evaluation of Shanxi's Environmental Status and Preliminary Evaluation Study of Coal Energy Base."

This is the first large-scale aerial survey of environmental pollution carried out in China.

If we want to speed up the construction of Shanxi's coal energy base, we must confront the important problem concerning how environmental pollution can be controlled. The purpose of this aerial survey is to understand the overall pollution situation in the atmosphere over Taiyuan, to determine the content of air pollutant, to understand the laws governing transport and conversion of the pollutant, and the distribution of surface thermal pollution. The data thus gathered will provide scientific bases for the formulation of regulations and measures for combating the environmental pollution of Taiyuan city and Shanxi Province. This scientific research project is sponsored jointly by the Shanxi Provincial government and the Chinese Institute of Environmental Science. The early stage survey is initiated in the Taiyuan area, and will be conducted in general over various cities including Datong and Yangquan. The entire project is expected to last approximately 5 years.

9113
CSO: 5000/4028

HEILONGJIANG COMPLETES ANTIPOLLUTION PROJECTS

OW091246 Beijing XINHUA in English 1229 GMT 9 Apr 82

[Text] Harbin, 9 Apr (XINHUA)--Heilongjiang Province has completed construction of 641 anti-pollution projects since 1981, the province's environmental protection office announced here today.

The province can now treat 54 million tons of waste water, 27 million tons of waste gas and 540,000 tons of slags and industrial residue annually. A total of 4.2 million yuan may be saved each year by recovering building materials and metallurgical and chemical products from the waste and economizing on coal.

In the last few years, scientists have made surveys of water, air and land pollution. Last year 92 million yuan was earmarked for pollution control projects.

Now, many factories which were polluting the Songhua River have effluent disposal systems. Industrial slags and residue discharged into the river has been reduced by 34 million tons annually.

More fish have appeared in the Nenjiang River in western Heilongjiang where fish were nearing extinction a few years ago owing to organic pollution of the river.

The province authorities have also encouraged urban residents to plant trees and grow flowers to improve the environment and clear the air.

CSO: 5000/4032

REMOTE SENSING USED TO STUDY POLLUTION PROBLEMS

OW040203 Beijing XINHUA Domestic Service in Chinese 0030 GMT 3 Apr 82

[Excerpts] Beijing, 3 Apr (XINHUA)--At the recent third meeting on environmental study of the Beijing-Tianjin-Bohai Sea area, experts pointed out that air pollution in the Beijing-Tianjin area is mainly caused by particles, of which nearly a half are soil particles or sands blown by the wind.

Since 1980, the environmental scientific committee of the Chinese Academy of Sciences has organized over 200 scientists and technicians from 15 research institutes to study the atmospheric, land and oceanic environmental conditions of the Beijing-Tianjin-Bohai Sea area. In order to get a clear idea about the environmental pollution situation of the 34,000 square-kilometer Beijing-Tianjin-Bohai Sea area (excluding the coastal waters), scientists and technicians have made use of remote sensing technology. In addition, in order to understand the impact of Beijing City's air pollution on Langfang and Tianjin to its leeward, scientists and technicians have also used iron towers and low altitude sounding instruments to conduct comprehensive atmospheric experiments in the field. They have made systematic studies of the accumulation of pollutants in the freshwater ecological system as well as the control of water pollution by mercury.

After analyzing the quantity and variety of insecticides used by 609 communes in 34 districts and counties in the Beijing-Tianjin-Langfang area over the past 2 years, they have basically understood the situation of the use of insecticides in the area, the quantities of residual insecticides in the soil and their impact on underground water sources, and have drawn up charts by communes according to their findings. Their study shows that the principal threat to the Bohai Sea is pollution by organic matter.

CSO: 5000/4032

DAQING TREATS WASTE WATER, HAS CLEAN AIR

OW261257 Beijing XINHUA in English 0703 GMT 26 Apr 82

[Text] Daqing, 24 Apr (XINHUA)--Daqing oilfield, China's biggest, might also be the cleanest, according to the local newspaper DAQING BAO.

The oilfield, which produces an annual average of 50 million tons of oil, or half of the national total, is the only oilfield in China that can treat all waste water discharged in the course of oil extraction, according to the paper. The oilfield has 24 waste water treatment plants, which handle 480,000 cubic meters of waste water per day. These plants have in the past decade recovered 1.2 million tons of crude oil, the paper said.

Through treatment, waste water becomes clean and is re-injected into the oil-bearing strata to increase pressure and stabilize output, the paper said.

Air in Daqing is cleaner, too, now that most of the local apartments have central heating. More than 80 percent of the industrial and other boilers have been transformed in such a way that they no longer emit black smoke as in the past.

Tail gas of ammonia nitrate, or the "yellow dragon" as it is known to local people, has been eliminated since the Daqing oil refinery was fitted with special equipment.

Gas emitted by the refinery is recovered, too, the DAQING BAO added. It used to be burned away.

An environmental inspection station under the municipal government of Daqing regularly monitors possible contamination of air, water and soil and noise pollution. A similar station has been set up by the Daqing petro-chemical complex.

CSO: 5000/4041

CHINESE PLA ADOPTS MEASURES AGAINST POLLUTION

OW240233 Beijing XINHUA Domestic Service in Chinese 0740 GMT 22 Apr 82

[Excerpts] Beijing, 22 Apr (XINHUA)--Various units of the PLA have adopted effective measures against pollution in order to protect the environment and natural resources.

Environmental protection agencies of the PLA have conducted investigations in nearly 300 factories, hospitals, boiler plants, oil depots, harbors and wharves in order to have a good grasp of the sources of pollutants, and have formulated a long-term plan and measures for environmental protection. In the past 2 years, the PLA has done much to control pollutants from factories and hospitals and smoke and dust from boiler plants. Up to now, 1/7 of the pollutants from the PLA's chemical plants have been brought under control. Smoke-dispersing and dust-eliminating devices have been installed in boiler plants providing heat and bathing water for PLA units in Beijing, Shanghai, Tianjin and other big cities. In addition, plans have been drawn up to control pollutants from oil depots, harbors, wharves and booster agents for guided missiles. Technical research and experiments on how to control these pollutants are being conducted. Various units of the PLA have been actively using solar energy, residual heat and marsh gas. This has been very helpful in eliminating pollution and improving the environment.

To give a boost to the work of protecting the environment, which the PLA has been carrying out, the PLA general staff headquarters, general political department and general logistics department recently promulgated the Chinese PLA's provisional regulation on environmental protection. The regulation called on all PLA units to rationally use natural resources, protect the environment and prevent environmental pollution and ecological destruction. In building, remodelling or expanding engineering projects, antipollution facilities should be designed, built and put into operation at the same time to prevent the creation of new pollutants. Planned measures should be taken to control, according to the seriousness of the case, existing pollutants, such as harmful waste water, waste gas, residue, smoke and dust from boilers, noise, radioactive residue and radiation from electromagnetic waves. The regulation also stipulates that units which cause serious pollution, which refuse to take corrective measures, and which have failed to meet the required standard, even after taking corrective measures, will have to suspend production, shift to production of other lines, cease operation completely or be removed to another place.

CSO: 5000/4041

ECOSYSTEM PROJECT TO MAKE BEIJING MODEL CITY

OW101328 Beijing XINHUA in English 1202 GMT 10 Feb 82

[Text] Beijing, 10 Feb (XINHUA)--Beijing is launching the first urban ecosystem research project in its history of over 3,000 years in order to build the capital into a first-rate, modern city and a model for China, said a spokesman of the Chinese Academy of Sciences today.

Such research, said the spokesman, is a major scientific item. The project will center on the distribution of industry and agriculture, urban construction, energy supplies, water resources, food supplies and waste treatment. Based on ecological study and a recent large regional survey, the research will provide scientific basis for construction and planning of the city.

The spokesman added that urban ecosystem reserach has just begun in China. It is urgent and of great importance because Beijing as China's capital is the political center of the whole nation and the center of international relations, he said. The city is a place that people throughout China look to as a model. Beijing has a dense population with rich economic and cultural bases, he said.

The spokesman said that Beijing has already turned into a heavy industrial center due to excessive development of heavy industry and overextension of capital construction.

Of the total investment appropriated for industrial projects in the city up to 1978, 87.9 percent was used for heavy industry and 12.1 percent for light industry, he said. Heavy industry accounted for 63.7 percent of Beijing's total industrial output value in 1979 while light industry accounted for only 36.3 percent. "This phenomenon does not accord with the development of the capital or the municipal construction principle. This is the main reason of environmental pollution," he pointed out.

The population has increased enormously in Beijing, the spokesman said. Its urban population has grown from 1.2 million in 1949 to 9 million at present. Population density has increased from 5,000 per square kilometer to 12,000 per square kilometer. However, vegetation averages 5.1 square meters per capita, including two square meters of water space. Consequently, the environmental quality in Beijing is greatly reduced.

Excessive use of underground water in Beijing has lowered the underground water table by two or three meters in 1981 and created a hollow of about 1,000 square kilometers under the city proper and the outskirts, the spokesman added. As a result, nitric acid content in water is up and water pollution has become serious. The city planning department has predicted that by the year 2000, the city will need 5,100 million cubic meters of water. The water shortage is inevitable and will become more serious at that time, he warned. In 1981, Beijing suffered its worst water shortage in 32 years.

Urban ecosystem research in Beijing, the spokesman said, began last October and will be completed in 1985. The project is divided into three stages:

-- In the first stage, researchers will make comprehensive studies of natural conditions, population trends, urban construction, land usage, economic development and environmental quality, outlining urban ecological divisions, the social economy and the overall environment by the end of this year.

-- The second stage of the research, to be completed at the end of 1983, will center on the city's needs and available supplies of energy, water resources and vegetables. This stage will also study garbage treatment and the balance of vegetation and water space.

-- The last stage, to be finished in 1985, will concentrate on systematic study, evaluation and calculation in order to design models for construction of the city and provide scientific basis for the central government.

Sponsored by the Committee on Environmental Science of the Chinese Academy of Sciences, the research is also being conducted by four institutes of geography, botany, environmental chemistry and zoology, and the ecology center and other organizations in the city.

CSO: 5000/4027

BRIEFS

CHANG JIANG WATER QUALITY MONITORING--Wuhan, 10 Feb (XINHUA)--A water quality monitoring system has been set up along the Chang Jiang. At present, there are 178 monitoring stations along the river to monitor water quality, control water pollution and protect water resources. These monitoring stations have been built one after another since 1977 at such places as Dukou, Chongqing, Yichang, Shashi, Hankou, Danjiangkou and Nanjing along the main stream and major tributaries of the Chang Jiang by the bureau in charge of protecting water resources of the Chang Jiang and various provinces and municipalities located along the Chang Jiang. At the same time, monitoring vessels were developed and commissioned to trace down sources of pollution, go to the rounds to check water quality and protect water resources. More stations will be built in the future to further improve this monitoring system. [Beijing XINHUA Domestic Service in Chinese 0124 GMT 10 Feb 82 OW]

HUNAN ANTIPOLLUTION MEASURES--Changsha, 14 Feb (XINHUA)--Hunan Province has reduced pollution with the 1,051 antipollution projects put into service during the last 2 years, according to the provincial environmental protection office. The office said that the province can now treat each year 100 million tons of waste water, 5,000 million cubic meters of waste gas and 800,000 tons of industrial residue. By multipurpose treatment, the province will retrieve annually from the wastes 50 kinds of metallurgical products, chemicals and construction materials worth more than 50 million yuan, the office said. The province earmarked nearly 100 million yuan for pollution control in 1980 and 1981, said the office. Many pollution-causing factories along the Xiangjiang River have installed effluent disposal systems with an annual capacity of reducing industrial residue discharged into the river by 500,000 tons and treating 70 million tons of waste water before the water flows into the river. New factories also have been fitted with devices to tackle the pollution problem. [Beijing XINHUA in English 0716 GMT 14 Feb 82 OW]

CSO: 5000/4027 END

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24 JUNE 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 358

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24 June 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 358

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EDITORIAL PRODS GOVERNMENT ON WASTE DISPOSAL ACTION

Melbourne THE AGE in English 3 May 82 p 13

[Editorial]

[Text]

UNTIL the environmentalists became active a decade or so ago, industrial waste disposal was not considered a pressing problem. Effluent was pumped into streams and rivers with hardly a second thought; while toxic waste was dumped into tips or quarries with an equal lack of thought about the consequences. Only when, as happened in America, water sources became polluted and dumped chemicals began to be linked with an increase in cancer, birth defects and other ailments among people living near the dumping grounds, did the authorities begin to show concern. In Australia there have been a few such incidents, the most notable of them being at Byron Bay, on the north coast of NSW, where recent investigations showed that, following 40 years of sandmining, there were unacceptably high levels of radioactivity in 24 homes and in other parts of the town.

In general, though, Australians have taken comfort in the thought that the problem is not a serious one, and that abuses — if they occur at all — are few. A report prepared by the House of Representatives standing committee on environment and conservation, and tabled last week in Parliament, gives the lie to that. What it says in a nutshell is that there is no reason to be complacent; that the storage, transport and disposal of millions of litres of hazardous chemicals is generally unregulated and often unsafe; that the present regulations applying to hazardous long-life radioactive waste are far from adequate; and that much of the hazardous chemical waste being produced in Australia is being dumped illegally.

There is some comfort for Victorians in the finding that, together with NSW, Victoria has made considerable progress in providing regulations and facilities for the disposal of hazardous waste. But, as the report also notes, pointing the finger particularly at Queensland, "some other States behave as though these hazards do not exist". The report is an important one and deserves to be treated by the States as such. If they do not put their own houses in order, the Federal Government should do as the report suggests and legislate to control both the transport and disposal of hazardous waste. The present situation where Australia has no compulsory controls over the use, transport and ultimate disposal of chemicals for commercial and industrial use is patently inadequate; and the States, as well as the Federal Government, have a clear duty to the public to see that such controls are introduced, and that industry is made to accept responsibility for safely disposing of its waste products.

CSO: 5000/7544

QUEENSLAND HAZARDOUS WASTE PROBLEM SAID TO NEED LEGISLATION

Brisbane THE COURIER-MAIL in English 3 May 82 p 3

[Text] A former chemist at the Willawong waste disposal site yesterday called for legislation to monitor the generation, transport and disposal of toxic wastes.

Mr Ralph Carlisle, a spokesman for the Council on Environmental Hazards, said Queensland's hazardous waste problem would not be resolved until this "cradle to grave" approach was implemented.

Mr Carlisle said construction of a proper waste treatment plant would be inadequate without supportive legislation, thoroughly enforced by the State Government.

Mr Carlisle exposed the problems associated with disposal of toxic "chemical cocktails" at Willawong when he gave evidence before a Federal Government standing committee hearing, last year.

He said then that five employees had left Willawong four for medical reasons, mainly kidney and liver complaints.

The House of Representatives standing committee on Environment and Conservation report was tabled in Federal Parliament last week.

Willawong was described in the report as a "disaster" and the report said there was "grave cause for concern".

Mr Carlisle said yesterday recommendations of the report should be implemented.

These included the introduction of State Government legislation which required the licensing of generators, transporters and disposal sites of hazardous wastes.

He said there should also be a multi-docket system for the movement of such wastes.

"The legislation should also require generators of waste to give, to the appropriate authorities, any information which may be required for proper disposal of the wastes," Mr Carlisle said.

He said the legislation should further stipulate that an industrial company should carry full responsibility for the ultimate proper disposal of the waste, even if an outside company was hired to carry the waste to a disposal site.

"Industry should not be able to buy its way out of the responsibility for its wastes simply by paying a transporter to take it away," he said.

Mr Carlisle said the inadequacy of Queensland legislation regarding hazardous wastes was highlighted when it was compared to the New South Wales Waste Disposal Act.

The Council on Environmental Hazards was set up last year. It consists of a number of Brisbane scientists.

Another member of the organisation, Mr Greg Miller, showed a Willawong official infra-red photographs of chemical leakage at the site almost three years ago.

CSO: 5000/7544

VICTORIAN GOVERNMENT TO SEEK EPA ASSISTANCE WITH WASTE DISPOSAL

Melbourne THE AGE in English 1 May 82 p 3

[Article by Bill Birnbauer]

[Text] The State Government would ask the Environment Protection Authority to provide detailed recommendations on the disposal and storage of dangerous chemical wastes in Victoria, the Minister for Conservation, Mr Walker, said yesterday.

Mr Walker said he expected a study would take about a year and that the recommendations would be implemented before 1985, the year a House of Representatives report has suggested the Federal Government should step in if State governments failed to introduce proper disposal strategies.

Mr Walker said the EPA would be asked to recommend the safest disposal and storage methods for various chemical wastes. He said an incinerator was necessary to dispose of intractable wastes such as polychlorinated biphenyls (PCBs) and that the EPA would consult interested groups, including local residents, on the best locations for the incinerator.

The EPA would also examine solidification, land fill sites and other ways of storing hazardous chemicals.

Mr Walker said luck had played a big role in the fact that Victoria had not had a big disaster in the storage, disposal and transport of toxic and inflammable chemicals. "I believe we have been lucky because most of the material has been stored in drums for eight to 10 years," he said.

"The big companies have been responsible in stockpiling the chemical waste but I believe there has been a bit of moonlighting by smaller companies which do not have the land to store their wastes.

"There is no evidence but there are reports that smaller companies have used truck at night to take waste to old mine shafts or old quarries in the country. I fear that some of that is true."

A report by the House of Representatives standing committee on environment and conservation released on Thursday recommended that the Commonwealth legislate to control hazardous wastes if State governments failed to introduce effective waste disposal strategies by 1985.

It also recommended that the Commonwealth should act if State governments failed to incorporate the Australian code for the transport of dangerous goods by road and rail into legislation by 1985.

The report listed several incidents of illegal dumping of chemical wastes but said that Victoria and New South Wales had made considerable progress in providing regulation and facilities for the disposal of wastes.

However, the secretary of the environmental law section of the Law Institute of Victoria Mr Kevin Zervos yesterday disputed the findings. He said Victoria had serious problems with stockpiling and the disposal of chemical wastes and said chemicals were being dumped indiscriminately or were being "flushed down the toilet".

In a submission to the EPA last year the environmental law section said: "Little or no measures are available in Victoria to deal with the disposal of intractable waste and the longer the problem remains unchecked, the more serious the problem becomes.

"The licensing provisions of the Environmental Protection Act of 1970 have provided some form of control on waste disposal but do little to lleviate the problem of the treatment and generation of industrial waste. Past disposal practices in Victoria have left us all in a state of ignorance as to how much industrial waste must be treated and even where it is, as no public records are kept by either producers, users, or disposers."

A spokeswoman for the EPA said yesterday that more than four million litres of intractable wastes were stockpiled by companies in Victoria in 1980. At the same time, companies were producing about two million litres of waste chemicals each year.

Attempts over the past three years to build an incinerator in Victoria to burn hazardous chemicals and to establish a waste dump had failed mainly because of opposition by local residents.

Plans in 1979 to establish a waste dump at Dargile near Heathcote were abandoned when a report showed the area was susceptible to seepage.

Plans for an incinerator at Avalon and at Werribee have also been abandoned. A proposal to ship waste to France for disposal was also abandoned after pressure on the shipping company by environment groups.

Mr Walker said the Liberal Government had not investigated the problem properly and had made some stupid decisions about the location of the proposed incinerator and dumping sites. He disagreed with a recommendation in the House of Representatives report that a single national incinerator should be established in New South Wales.

He said the danger involved in transporting hazardous chemicals and the costs involved seemed to outweigh the advantages of having a national incinerator. Mr Walker said he was considering, as a temporary measure, the use of a US ship, the Vulcanus, to get rid of some of the more dangerous chemicals stockpiled in the State.

The ship had an incinerator on board which could burn dangerous chemicals offshore.

CSO: 5000/7544

AUSTRALIA

NSW GOVERNMENT BACKS DOWN ON TOXIC WASTE DISPOSAL FACILITY

Sydney THE SYDNEY MORNING HERALD in English 7 May 82 p 3

[Article by Ross Dunn]

[Text]

The State Government has backed down on its controversial proposal to build a toxic waste disposal plant at Wetherill Park, Fairfield.

Fairfield City Council was notified yesterday of the decision by the Minister for Planning and Environment, Mr Bedford.

His decision follows opposition from the ALP-controlled council and residents, who believed the plant would become a major health risk to all of Sydney because it was only 1.2 kilometres from Prospect Reservoir and there were fears that the City's drinking water could become polluted.

Mr Bedford said: "The State Government is convinced of the urgent need to find some answer to the problems of the disposal of intractable industrial waste.

"The issue will be closely re-examined."

He would go no further on the question of an alternative site.

An Independent Fairfield Council alderman, Mr Sam Barone, who is also the president of the local Residents' Action Group, said last night: "I am absolutely thrilled for the people of the area.

"This goes to show that there is some justice in the world after all."

Alderman Barone said the opposition to the proposal by local Labor politicians, the poor presentation of the environmental impact statement and the Federal Government's suggestion that the site could be used by all States had led Mr Bedford to change his decision.

"I think the Federal Government's suggestion was the straw that broke the camel's back," Alderman Barone said.

The Mayor of Fairfield, Alderman Keith Dunn, said last night he was delighted by the news.

"I am especially happy for the residents, but I am as yet unaware of Mr Bedford's reasons," Mr Dunn said.

"I saw him on Monday and he gave me no indication then that he would change his decision."

CSO: 5000/7544

VICTORIAN GOVERNMENT TO INVESTIGATE SAFETY OF CHEMICAL INDUSTRY

Melbourne THE AGE in English 5 May 82 p 3

[Article by Peter Roberts]

[Text] The Victorian Government is planning a public inquiry into the safety of the State's chemical industries.

Announcing the move yesterday, the Minister for Conservation and Planning, Mr Walker, said he would propose the inquiry to Cabinet as soon as possible.

He said the Government was concerned about the safety of workers handling toxic chemicals in industry, and the dangers posed to emergency workers and the public by industrial accidents.

"The chemical industry is highly sophisticated," Mr Walker said. "With the best will in the world, even the most careful industry cannot say that workers are fully safeguarded. Unions are concerned about it — and I am concerned about it."

Mr Walker also foreshadowed:

- Significant increases in pollution fines and Environment Protection Authority pollution licence fees — now a maximum of $16,000 a year — to pay for an expanded EPA;
- Legislation to give community and environment groups legal standing to appeal against EPA licence determinations;
- The closure of loopholes in the EPA Act, such as that which allows companies to avoid prosecution if they notify the EPA of any illegal discharges they have made.

Mr Walker said a day-long emergency at the B. F. Goodrich Chemical plant at Altona in February had underlined the dangers posed by some industries. The EPA is still preparing its report on the incident, which involved a leak in a storage tank containing toxic and highly explosive vinyl chloride monomer (VCM) — the raw material for making PVC plastics.

"The more I look into the B. F. Goodrich matter the more conscious I am that we were extremely lucky that a major explosion did not occur," Mr Walker said. "It is clear that if a major explosion had occurred, a significant number of other industries would have been involved. There may have been a chain reaction involving the whole petrochemicals complex."

Mr Walker said he was not satisfied with the public assurances given at the time by B. F. Goodrich that there was no threat of a big explosion. He said any inquiry would consider the incident, as well as the 18 VCM leakages reported from the Altona plant during the past five years.

"But it isn't just a matter to do with B.F. Goodrich," Mr Walker said. "That was a serious incident, but there are many incidents of a like kind which occur."

Mr Walker has held talks with the joint ACTU-THC occupational health and safety unit about worker safety issues. The firefighters' union has also expressed concern about the safety of its members sent to tackle chemical accidents.

Mr Walker said firefighters arriving at the Altona site were not fully aware of the danger of the chemical involved in the accident.

"Some of the lessons learned are that we need to improve our procedures in relation to possible disasters of a chemical kind, particularly in the western suburbs. There is some evidence that the B.F. Goodrich incident was not well handled."

Mr Walker said seven Ministries would be involved in drawing up terms of reference for the inquiry, and deciding on what form an inquiry should take. He said it was important to constitute an inquiry that would lead to an improvement in safety procedures, and not simply be an end in itself.

"I am hopeful of being able to talk to Cabinet within the next couple of weeks; as soon as possible," he said.

CSO: 5000/7544

DIRECTOR OF WA CONSERVATION PROGRAM IS U.S. GRADUATE

Perth THE WEST AUSTRALIAN in English 3 May 82 p 16

[Text]

A top ecology expert, Mr Thane Riney, is to prepare WA's conservation strategy.

Announcing the Government appointment, the Minister for Conservation and Environment, Mr Laurance said that Mr Riney would gather and present material prepared by government departments responsible for natural resources such as agriculture, forests, water, fisheries and wildlife.

He would also co-operate with other government and non-government organisations in preparing the draft strategy which comes in response to a worldwide call for action to conserve living resources.

Mr Laurance said that WA was fortunate in finding a scientist of the calibre and with the breadth of experience of Mr Riney.

He said that Mr Riney graduated from the University of California, majoring in natural history and zoology, in 1951 and later worked in rangeland management and wildlife research in the U.S., New Zealand and Africa.

In 1962, he became a consultant ecologist to the United Nations Food and Agriculture Organisation and from 1964 to 1973 he was based at FAO headquarters in Rome serving in various positions before becoming chief of forest conservation, wildlife and national parks.

He served for six years on the executive council of the International Union for the Conservation of Nature, which was responsible for preparing world conservation strategy.

FELLOW

Mr Riney came to Australia in 1978. After a short period with the Australian National Parks and Wildlife Service he was appointed visiting fellow at the Australian National University in 1980.

He has been serving as consultant in conservation to several Australian States and in 1980 organised a national conference on Australia's marginal lands.

The WA strategy, under the direction of a Conservation and Environment Council committee, would take about six months to prepare, Mr Laurance said.

CSO: 5000/7544

CONTROVERSY ARISES OVER RADIOACTIVITY FROM TITANIUM PLANT

Perth THE WEST AUSTRALIAN in English 1 May 82 p 30

[Text] **The WA Minister for Health, Mr Young, reacted angrily yesterday to allegations that the Bunbury estuary is in danger of serious pollution from the Laporte titanium plant.**

He said that there was no evidence of any seepage of radioactve materials from sand dune lagoons into the estuary.

If there were any seepage it was so low as to be indistinguishable from variations in the natural radiation found in water all over the world.

Mr Young was commenting on reports that the Bunbury estuary and Leschenault Inlet were at risk as a recreation area because of pollution from Laporte.

He said that comments by an associate professor of physics at Murdoch University, Dr Phil Jennings, appeared to be politically motivated.

Dr Jennings had been reported as saying that radiation levels in the Bunbury estuary were cause for concern.

CONCERN

He called for stong action to be taken to ensure that people were exposed to as little radiation as possible.

Dr Jennings said that radiation levels near Laporte were worrying enough to put an end to the dumping of radioactive materials in sand dune lagoons beside Leschenault Inlet.

Radiation levels were already up to one-third of the maximum level recommended by Australian health authorities.

FICTION

Mr Young said that it was pure fiction to suggest that the future of the Leschenault Inlet as a recreation area was at risk.

He said that radioactive levels in estuary water were closer to one-twentieth of the maximum levels acceptable to Australian health authorities—and not up to a third as Dr Jennings was quoted as saying.

"Radium and other naturally occuring radioactive substances are found in water all over the world, and it is not unusual to find radium in groundwater," Mr Young said.

"There is a stream of effluent flowing into the sandhills and the radioactive content of this stream is very low indeed.

"There are 8500 cu m a day of liquid effluent going into these ponds, but there is no evidence of any seepage from these ponds into the estuary."

CSO: 5000/7544

MINERS ACCUSED OF DAMAGING VEGETATION IN MINERALS SEARCH

Perth THE WEST AUSTRALIAN in English 8 May 82 p 24

[Article by Miranda Sadka]

[Text] Some amateur miners are causing severe damage to vegetation in their search for gold and other minerals, according to the Pastoralists and Graziers' Association.

The deputy director of the association, Mr G. Savell, said yesterday that the areas affected were in the Eastern Goldfields and the Murchison.

Amateur gold seekers had descended on the areas with metal detectors.

In the Eastern Goldfields, some metal seekers scraped off surface soil with front-end loaders and bulldozers and checked the exposed areas with detectors.

Machinery

The use of such machinery sometimes laid waste one to two hectares and in some places created pits about 60cm deep.

In the Murchison area, some prospectors loaded big, mechanised dry blowers with soil scooped up by bulldozers and front-end loaders.

Mr Savell said that pastoralists had complained to the association about the damage being done to their properties.

"The operations are ruining first-class vegetation and fodder and creating a big problem on the land," he said.

"It subjects the land to erosion from wind and rain. In fragile environments with an unreliable rainfall the land doesn't recover quickly."

Mr Savell said that the association expressed its fears about the damage at its last pastoral conference at Mt Magnet in October.

It had written to the Minister for Mines, Mr Jones, and would refer any future instances to him for action.

Mr Jones said yesterday that the Government was worried by the reports.

Some people were using front-end loaders and bulldozers when searching for alluvial gold on pastoral lease and crown land.

"The holder of a miner's right is authorised to prospect on crown land and to extract and remove samples up to 20 kilos--but with as little damage to the surface of the land as possible," he said.

Offence

"Stripping operations are a mining operation under the provisions of the Mining Act and it's an offence to carry on such mining operations on anyland without authorisation."

Mr Jones said that people carrying on such operations were liable to a penalty of $1000 plus a fine of $200 a day if the offence was a continuing one.

CSO: 5000/7545

AUSTRALIA

BRIEFS

RADIOACTIVE FILL PROBLEM--SYDNEY--A modern hospital on the New South Wales north coast may have to be demolished because radioactive filling was used in its foundations. Radiation levels in the new wing of the Byron Bay Hospital are well above the recommended safety level, according to a Health Commission study. A spokesman for the NSW Health Minister, Mr Brereton, said yesterday the hospital block might have to be demolished if plans to remove the radioactive material failed. The Health Commission intends to drill through the floor of the building to "suck out" the radioactive filling which lies a few centimetres deep on the ground surface. If the plan fails, the 17-year-old building will be torn down. The Health Commission survey found high radiation levels in 24 houses in Byron Bay, as well as in the baby health centre and in some classrooms of the primary school. The Health Minister's spokesman said the radioactive filling tailings from sand mining carried out at Byron Bay up to 1975, could be easily removed from near the baby health centre. Mr Brereton said he expected the sand mining company, Associated Minerals Consolidated, to pay for the clean-up at Byron Bay. [Brisbane THE COURIER-MAIL in English 1 May 82 p 3]

NSW NATIONAL PARK--Some of the richest and most intact Aboriginal sites in NSW are included in a new national park in the Upper Hunter Valley region announced open yesterday by the Premier, Mr Wran. The Goulburn River National Park covers about 70,000 hectares of the Goulburn River Valley and stretches from Sandy Hollow in the east to Ulan in the west. The area had been under investigation as a park since the inception of the the National Parks and Wildlife Service in 1967. Mr Wran said yesterday: "The Boulburn River National Park is composed mainly of rugged, undeveloped, sandstone country, with about 65km of the meandering and scenically outstanding Goulburn River flowing in a rockwalled gorge in the park for much of its length. "The area is like the Northern Territory gorge country and recreation will naturally be concentrated around the river." The park contains a number of important Aboriginal sites, including some of the richest and most undisturbed remains of early Aboriginal occupation in NSW. The area also features a number of unusual trees including black cypress pine, dawson's gum, caley's ironbark, forest redgum, scribbly gum and white box. The fauna is concentrated along the river, with species such as wallaroo, wombat, eastern grey kangaroo and emu easy to see, as well as birds such as the magnificent lyrebird, wedgetail and sea eagles, rainbow birds and numerous parrot varieties. [Canberra THE AUSTRALIAN in English 3 May 82 p 2]

RAINFOREST CONSERVATION--The former South Australian Premier, Mr Don Dunstan, will be among the speakers in King George Square next Saturday when a new conservation organisation, aimed at saving Queensland's rain forests, is launched. The Queensland Rain Forest Conservation Society has been formed in response to the loss of forest to agriculture, hoop pine plantations, residential sub-divisions, mining, and what it sees as the biggest threat--logging. Mr Dunstan, who now lives in North Queensland, will speak at the public meeting which is being held in conjunction with the Australian Conservation Foundation. The new society's secretary, Dr Aila Keto, said yesterday Queensland's rain forests included some of the most complex ecosystems on earth, equal in conservation status to the Great Barrier Reef. But the way in which they were being managed and exploited was not compatible with the conservation of their scientific, aesthetic and wilderness value. Dr Keto said rain forests were a popular but rare feature of the Australian landscape. "The public is probably unaware of the degradation which is occurring and the values being lost as a consequence," he said. Dr Keto said the society aimed at informing people of the unique value of rain forest and enlist public support to ensure conservation of the entire rain-forest system in Queensland. [Brisbane THE COURIER-MAIL in English 3 May 82 p 22]

AGRICULTURAL CHEMICALS PROBLEM--State laws controlling the use of agricultural chemicals need to be overhauled, senior officers of the Agricultural Department say. They say there are still gaps in the relevant legislation--20 years after Victoria's worst outbreak of pesticide contamination. The deputy director-general of agriculture, Mr Bob Taylor, said it was time for laws to be tightened. "We would like to see hard line, but not draconian, legislation in the agricultural chemical area," he said. "There is room for a review--all too often people think because legislation exists it is written and fixed. The department's chemical division director, Mr R. S. Belcher, said there was no provision in the law to permit quarantine or seizure of contaminated crops, cattle or poultry. He said this could cause problems if there were a repeat of pesticide poisoning such as in Heytesbury, south-west Victoria, in 1963. "If you have chemical contamination without people being sick, then there is no power to do anything about it," he said. "Once people fall sick, it is ok, the power is there." In the Heytesbury incident no checks were made on contaminated meat sold for human consumption. "Theoretically," Mr Belcher said, "the meat would be illegal when sold, but you have to find it, and that is difficult." He said New South Wales had laws to cover such a case, and Western Australia was in the process of introducing similar legislation. [Melbourne THE AGE in English 4 May 82 p 16]

CSO: 5000/7545

INDIAN DELEGATE SPEAKS AT NAIROBI CONFERENCE

New Delhi PATRIOT in English 15 May 82 p 3

[Text] NAIROBI, May 14 (PTI)—India today asked the United Nations Environment Programme (UNEP) to refrain from drawing 'ever ambitious' plans and rather confine its field to a core four point programme until the critical question of its funding is resolved satisfactorily.

The core programme put forward today by the leader of the Indian delegation, Mr B B Vohra at the session of special character reflects the overriding priority given to environmental issues by the UN General Assembly while determining the international development strategies for the eighties.

It covers in essence the better management of natural and living resources, the control of pollution and improved sanitation.

Mr Vohra made it clear although the suggested core programme would need a certain re orientation of perceptions but at the same time it would help every one concerned, including the UNEP to have clearer idea of its objectives enabling it to relate them better to environmental realities as they actually exist.

As a result, the UNEP would improve its credibility at a critical stage in its career particularly in the eyes of the developing countries which have long felt neglected by it,' Mr Vohra said.

India was one of the few countries to raise the question of the UNEP's financial situation in the plenary itself.

The situation, its leader told the plenary, was so critical that the UNEP has had to cut back almost half of its programme activities. The executive director has rightly complained that no organisation can be expected to plan effectively when it does not know when or how much funding will be provided to it', Mr Vohra said.

CSO: 5000/7056

BRIEFS

WAN LI VISITS ENVIRONMENTAL EXHIBIT--Beijing, 3 Jun (XINHUA)--Comrade Wan Li visited an "exhibition on protection of China's natural environment" at the Beijing Museum of Natural History this afternoon. At the exhibition, he told responsible persons and experts of our environmental protection departments: Protecting the natural environment is a major task which will bring benefit to our posterity. Natural conditions throughout the country should be analyzed. Where the natural environment needs to be protected, we must do so. The environmental protection law must be strictly enforced, and plans for protecting the natural environment must be combined with agricultural planning. The "exhibition on protection of China's natural environment" is jointly sponsored by the Environmental Protection Leading Group under the State Council, the China Society of Zoology, the Beijing Museum of Natural History and other units. More than 100,000 people have visited the exhibition since it opened on 5 April. Comrade Wan Li visited the exhibition in the company of Li Ximing, minister of urban and rural construction and environmental protection, and experts of departments concerned. [Excerpt] [OW052030 Beijing XINHUA Domestic Service in Chinese 1520 GMT 3 Jun 82]

CSO: 5000/2125

VO NGUYEN GIAP ADDRESSES ENVIRONMENT DAY MEETING

BK051525 Hanoi Domestic Service in Vietnamese 1430 GMT 4 Jun 82

[Report with recorded portions on 4 June Hanoi meeting to mark World Environment Day]

[Summary] On the evening of 4 June, the Vietnam committee for World Environment Day held a meeting in Hanoi theater to mark World Environment Day. "Attending the meeting were Vice Premier Vo Nguyen Giap, Vietnam Fatherland Central Committee Presidium Chairman Hoang Quoc Viet, leaders of various sectors and central government agencies and the people of Hanoi. (Matthew Cahail), the UN Development Program representative in Hanoi, also attended the meeting."

Vice Premier Vo Nguyen Giap delivered an opening speech. After pointing out that our party and state have shown the proper interest in the environment issue and activities, he stressed:

[Begin recording] "In the 1980's and particularly during 1981-85, the programs designed to resolve the environmental protection problems have become part and parcel of the economic and social development plan of our country. In fact, the environmental problems of our country bear the same characteristics as those of many developing countries.

"We once thought that environmental problems, namely environmental pollution, existed only in the developed industrial countries. But now, we can clearly see that in the developing countries such as ours, the protection of the environment has also become an important survival problem.

"In recent years, due to inadequate andunscientifically based knowledge, many of the environmental problems were not raised and resolved correctly according to their significance. Land, water, forest, sea, animal and mineral resources have not been protected, exploited and used rationally by us. On the contrary, our action has damaged the environment.

"Under tropical conditions with unstable biological balances, the irrational use of land and the wanton destruction of forests have quickly depleted our agricultural potentials, forest resources and forest land. Land has become depleted and fallow. Sources of water such as springs and the aquifer have dried up.

"The amount of covered forests have decreased to 30 percent or less, within the danger level. In several localities, this amount was even down to 10 percent. The annual losses of more than hundreds of thousands of hectares of forest cannot be recovered through afforestation. Many valuable and rare species of animals and vegetation which abounded in our country seem to be on the way to extinction. This will mean the loss of an irreplaceable source of production means. Losses of coal and other minerals during the exploitation of our resources cannot be renewed to the necessary levels by a sector of the national economy. These problems must be quickly resolved.

"We have not mentioned another very important cause: The long wars of aggression in the past few decades -- especially those waged by the U.S. imperialists and the Chinese expansionists and hegemonists -- have caused serious destruction of the environment of our country on a large scale. The volume of bombs and ammunition used by them would equal the destructive force of scores of nuclear bombs and the quantity of dioxide scattered on 50 percent of our forests has destroyed or leveled hundreds of thousands of hectares of forests, causing multifarious damages to the environment of our country, and threatening our present and future generations with serious consequences if we do not take necessary countermeasures.

"The environmental problem is therefore vital and important to our country as well as to other countries of the world." [applause; end recording]

(Matthew Cahail) then read a statement by (Mochtar Patobal), the UN Environment Program director, on the occasion of World Environment Day.

Following him, Professor Dang Huu, chairman of the State Science and Technology Commission, read a report on the early contributions of Vietnam to the activities of World Environment Day. The report emphasizes: [Begin recording] "We call on all people to realize more profoundly and to act more realistically upon the problems of protecting the environment and using the natural resources rationally and scientifically. Each citizen must realize that he is related organically to the world around him." [applause; end recording]

The meeting concluded amidst an atmosphere of high determination to implement Directive No 70-CP of the Council of Ministers to participate in a practical manner in the activities of World Environment Day for the sake of national construction and defense and for the people's happiness.

CSO: 5000/2125

BRIEFS

SOVIET-BULGARIAN MEETING--On 25 May G.I. Marchuk, deputy chairman of the USSR Council of Ministers and chairman of the State Committee for Science and Technology, received G.P. Pavlov, chairman of the Bulgarian Council of Ministers Committee for the Protection of the Environment. There was an exchange of opinions on questions of further cooperation in the sphere of environmental conservation. Taking part in the talk was Yu.A. Izrael, chairman of the State Committee for Hydrometeorology and Environmental Control. [TASS report] [Text] [PM011509 Moscow PRAVDA in Russian 26 May 82 p 4]

CSO: 5000/2125

CHAMBER OF COMMERCE LAUNCHES KINGSTON CLEAN-UP CAMPAIGN

Kingston THE DAILY GLEANER in English 24 May 82 Clean As a Whistle Supplement p X

/Article by Elaine Commisiong/

/Text/ Individuals have expressed outrage at the steady deterioration in the state of our environment. Often individuals have tried to correct the situation only to fail dismally. Others have adopted a "don't care" attitude. They say: "Let someone else do it" or "Let Government see about it." The truth is, neither of these attitudes will help to correct the situation in which we find ourselves.

Streets, parks and sidewalks are filthy through our combined efforts: the businessman, the office manager, the motorist, the higgler/vendor, the pedestrian, the householder through the careless disposal of refuse have helped to reduce our surroundings to its present condition. Likewise, any corrective measures to improve it demands our co-operative efforts.

When next you walk along the streets and see garbage accumulated, ask yourself these questions:—

Why is it there?

Who put it there?

What can I do to help correct it?

"Why Is"--a complex of reasons, a lack of personal pride which is more evident in our people today. Often there is a lack of facilities for the convenient disposal of garbage.

Are garbage receptacles frequently placed, easily available for use?

This is a prime consideration if our heightened consciousness is to be translated into action.

"The Who"--is easy. We all contributed to the problem in one way or another. Either directly, by the illicit disposal of our waste, or indirectly by opting to ignore the existing condition or ignoring the opportunities provided for helping groups who are trying to do something to improve the situation.

Are you guilty of littering the streets by throwing used tissues, cigarette boxes, cigarette butts and other waste material from moving vehicles; by throwing paper and other office refuse into the nearest ditch, burnt-out building or open lot; by tossing ice cream or candy wrappers, boxed-drink containers and thoughtlessly away? If so, you must now cease from doing so.

The present problem would be relieved if this was done.

Let it be your May 24 resolution. The Civic Committee of the Jamaica Chamber of Commerce through its campaign will be assisting you to maintain it.

As a first phase, four hundred (400) garbage drums are placed throughout the city. Instead of littering the streets, endeavour to use them. Help by maintaining that the garbage drums are not removed or damaged (in any way) so that their use can be sustained.

Bag It

Ten thousand Car Litter Bags are being distributed to motorists free of cost under the joint courtesy of the Civic Committee of the Jamaica Chamber of Commerce and the Shell Co. (West Indies) Ltd. Motorists use these containers instead of our streets. You may devise your own Car Garbage Bag by using a small plastic bag.

On the question of Commercial garbage, Office Managers and businessmen may be ignorant of the fact that they are wholly responsible for the disposal of their litter. Others, though knowledgeable of the fact are "uncaring" as to where their garbage, collected by private disposal services, is deposited.

The Civic Committee recognised the difficulties inherent in attitudes and plans to inform groups as to their responsibilities in various areas while working on a scheme which will assist the regular collection and disposal of commercial garbage to the prescribed dump at Riverton City.

The campaign hopes ultimately to end the sight of garbage accumulating on open lots and on sidewalks. The primary responsibility lies with each individual and businessman to ensure that "refuse" from his business is properly disposed of.

Stack It

Vending on streets has become "the norm" in all commercial areas and has extended to residential communities. Our plazas bear mute evidence at night of a complete lack of responsibility of both vendor and customer. How can this eyesore be corrected? On whom does the responsibility lie? If each vendor or higgler would see to it that the husks from his/her coconuts are carefully collected, that the skins of the fruits sold are not carelessly thrown around the stall but that all litter originating from his/her stall is carefully collected and removed, then there is no doubt that the conditions of our plazas could be greatly improved.

All of this seems to indicate the importance of both corporate and individual resolutions to see it as our duty to keep our surroundings clean.

Jamaicans are phenomenally house proud. We take personal pride in our homes. What is necessary is to translate this sense of responsibility and pride to our larger environment. It is our duty. Together, we can make it possible, we can make Kingston "Clean as a whistle" and beautiful again.

/Editor's Note: The foregoing article is part of a 24-page "Clean As a Whistle Supplement" to THE DAILY GLEANER devoted exclusively, in articles, photo essays and advertisements to a Kingston clean-up campaign concentrating on garbage, trash, waste disposal and related environmental factors. Articles include helpful hints on garbage disposal, messages from political and civic leaders, the relationship of environment and health and how the business community can help in the clean-up drive. One item notes that as of 24 May, 400 garbage bins emblazoned with the logo and slogan--"The City's Beauty Is Our Duty"--of the campaign, will be distributed throughout Kingston./

CSO: 5000/7546

REGIONAL DROUGHT-RELIEF COMMITTEES ESTABLISHED

Gaborone DAILY NEWS in English 31 May 82 p 1

[Article by Solomon Lotshe]

[Text]

PEOPLE in the North East District have been told that Government has provided P22 million to be used for drought relief.

The people were told by the Minister of Public Service and Information, Mr Daniel Kwelagobe, that Government had established drought-relief committees at regional level chaired by District Commissioners working closely with Village Developent Committees and Parent Teachers' Associations.

Mr Kwelagobe said the committees were given the task of distributing drought relief food to needy people. He noted that TB patients, expectant and nursing mothers, pre-school and school children, and remote area dwellers would be the beneficiaries of drought-relief food.

The Minister said extra drilling machines had been bought to sink more boreholes in areas where there are acute water problems. He said in other worst-hit villages, water would be supplied in drums.

Mr Kwelagobe advised the drought-relief committees in the councils, to identify labour-intensive projects where participants would be paid P1.50 per day. He said cattle would be vaccinated against botulism and be given the vitamin A vaccine free of charge. He also said supplementary stock feed would be sold to farmers at a reasonable price.

Minister Kwelagobe noted that Government would provide about P23,5 million for the Arable Land Development Programme to assist farmers to improve their agricultural production. He encouraged small farmers to come forward and take advantage of the scheme.

The Minister who introduced the new specially-elected Member of Parliament, Mr Chapson Jabavu Butale, also briefed his audience about the present bleak economic situation in the country and which he said was brouhgt about by low prices of diamonds on the world market.

At Gulubane the people complained that the 80 thebe which would be paid to women involved in stamping sorghum to be used for drought relief was too little. They argued that the VDC Chairman at Zwenshambe,

Mr Kuswane complained about the poor reception by Radio Botswana in the area and requested the Minister to improve the situation.

Throughout the tour, people complained about the shortage of trucks used for sending cattle to the BMC and asked the minister to bring the matter to the attention of the Government.

BOPA

CSO: 5000/5764

BRIEFS

BRITISH DONATE VEHICLES--The British High Commissioner of Botswana, Mr W. Jones, last week, Thursday, handed over three vehicles to the Minister of Finance and Development Planning, Mr Peter Mmusi, to be used to distribute food and goods related to the Drought Relief Programme. The three vehicles, worth P100 000 were earlier used by the British Government to map some areas in Botswana and the project got finished over a year ago. The Minister of Finance and Development Planning, Mr Peter Mmusi, thanked the British Government for the offer and said since the vehicles are four-wheel-drive they will be suitable to be used in difficult areas of this country where drought is more severe. The three vehicles are five-ton trucks and are still as good as new. [Text] [Gaborone DAILY NEWS in English 10 May 82 p 1]

SEFALANA DONATION--Sefalana Sa Botswana Milling Company on Monday donated 72 tonnes of maize meal to the Botswana Government in response to the President Dr Q.K.J. Masire's drought appeal to both international and local organisations. The donation was received on behalf of the Government by the Minister of Finance and Development Planning, Mr Peter Mmusi who in his remarks said that it appeared that local companies had the impression that only international bodies could help the Government when there were difficulties. He said during the past years like 1965 and 1966 only international donors responded positively to the drought relief programme adding that Sefalana Sa Botswana was going to be an example to other local companies which he said had the means which are starving in the country. On his part an official of the company disclosed that the maize meal which is a product of Sefalana in Lobatse was mixed with milk and it was going to be supplied to pregnant women, TB patients and related patients. [Excerpt] [Gaborone DAILY NEWS in English 21 May 82 p 1]

SWEDISH AID--Another major contribution is to be made to Botswana's Drought Relief Programme. This time the donation comes from the Swedish Government. A press release from the Ministry of Finance and Development Planning states. "The Swedish Government has decided to make a grant of P1.7 million to Botswana's Drought Relief Programme. The grant will be used for drilling rigs, vehicles and equipment." "This additional assistance from Sweden is intended to ease the effects of the serious drought that Botswana experiences by increasing the capacity to drill boreholes," the release states. "In the long run it is also intended to help the Department of Water Affairs to expand its ordinary village water supplies programme." The release adds:

"In response to the offer the Minister of Finance and Development Planning, Mr Peter Mmusi thanked the Swedish Government for its contribution to alleviate the water problems which face majority of Batswana in the rural areas as a result of the current drought problems." [Text] [Gaborone DAILY NEWS in English 24 May 82 p 2]

EEC APPROACHED--The President, Dr Quett Masire, has disclosed that the Government recently made a request to the European Economic Community (EEC) Botswana's major beef market to lift the ban on cattle movements across veterinary cordon fences in an attempt to assist the trekking of cattle from drought stricken areas to comparatively better grazing elsewhere. Dr Masire said the issue was being considered and that hopefully the EEC would respond to the request either at the end of this month or early next month. The President was addressing residents of Lerala on Thursday. He said the EEC had agreed to the Government's request to reopen the sale of cattle at some parts of the country which were closed since the outbreak of the foot and mouth disease. Dr Masire urged farmers to sell more of their cattle to the Botswana Meat Commission (BMC). He praised the residents of Lerala for actively involving themselves in development projects despite the adverse climatic and economic conditions. Talking about drought, Dr Masire assured the people that the labour intensive scheme would be extended to many parts of the country to provide an alternative source of income for the rural population. The scheme, the President said, was also geared at promoting development in general. [Excerpt] [Gaborone DAILY NEWS in English 23 May 82 p 1]

CHINESE AID--The Chinese Red Cross Society has donated 10 000 US Dollars to Botswana Government to be used in the Drought Relief Programme. The cheque which was received by the Minister of Finance and Development Planning, Mr Peter Mmusi yesterday, was presented by the Chinese Ambassador to Botswana Mr W. Rensa, who expressed sympathy and support of the Chinese to Botswana's present deplorable drought situation. In his remarks the Minister of Finance and Development Planning, Mr Peter Mmusi, thanked the Chinese Red Cross Society for their quick response to the President's appeal for international assistance. This was the second donation since the President Dr Q.K.J. Masire made an appeal for the international assistance. America which was the first donor presented 25 000 US Dollars to the same Minister. BOPA [Text] [Gaborone DAILY NEWS inEngliish 7 May 82 p 1]

FREE VACCINES--The forthcoming Government Drought Relief package, including the free supply of Vitamin A and Botulism vaccines for livestock are to be made available to farmers in affected areas throughout the country, the Minister of Public Service and Information, Mr Daniel Kwelagobe informed his constituents in a well attended kgotla meeting at Mogonon in thee Kweneng District recently. Mr Kwelagobe explained that the Government had taken the action in an attempt to help farmers affected by drought. He urged his constituents to be prepared for the relief programmes, which he said would be channelled to them through their local development committees. He also advised them that the food would first be directed to expectant and breast-feeding mothers, school children and other needy persons. [Excerpt] [Gaborone DAILY NEWS in English 5 May 82 p 1]]

CSO: 5000/5764

EFFORTS TO COPE WITH DROUGHT REPORTED

Harare THE HERALD in English 12 May 82 p 7

[Text] Bulawayo. Since the beginning of the year the Cold Storage Commission has paid more than $5 million to communal farmers for cattle bought at cattle sales in communal farming areas.

With cattle bought by other buyers at the sales, communal farmers have been paid almost $6 million this year.

The sales, dubbed Operation Rescue, form part of the commission and Government activities to offset the effects of the drought. From January 1 to May 8, 45 767 cattle have been offered for sale, a spokesman for the Cold Storage Commission said yesterday.

Of these, the CSC has bought 32 196 at an average net price of $160 each.

Other buyers have bought 5 977 cattle at an average price of about $120 each.

A total of 7 594 cattle were withdrawn from the sales by the owners.

In answer to a question, the CSC spokesman said that a further 2 000 cattle might have been sold had two rounds of sales (in Nkayi and Plumtree) not been postponed for security reasons.

No other sales have been postponed. The spokesman said it was expected that the CSC would be able to announce the engagement of an auctioneer by the end of this week.

The former contract auctioneer for communal land cattle sales, Tunmer (Midlands) Pvt. Ltd, withdrew their services because of the security situation.

Boreholes Needed to Beat the Drought

Bulawayo. About 140 boreholes and between 40 and 50 sand extraction points are needed in Matabeleland's drought-hit communal areas, the provincial water engineer, Mr Jim Nurton, said yesterday.

The district councils have been asked to inform the ministry how many water points their area needs, but the information has not yet been received for all areas.

Inquiries in Harare revealed that some initial finance to launch the scheme should arrive in Bulawayo soon.

Mr Nurton said that since January this year his office has drilled 38 boreholes and cleaned nine.

Eleven drills are at work throughout Matabeleland. Five of them are owned by the ministry and six by contractors. Another two or three drills provided by contractors will join the programme next week, he said.

CSO: 5000/5755

MATOPOS PARK DAM MAY BE USED TO SAVE CATTLE

Harare THE HERALD in English 21 May 82 p 1

[Text] BULAWAYO.

THE Minister of Water Resources and Development, Mr Cephas Msipa, is to discuss with two other ministries the possibility of releasing water from the Matopos National Park to save cattle of the communal people who live downstream.

In an interview here on Wednesday, after his tour of Kezi and Gwanda areas, the minister said the situation in the two areas was "very serious — more serious than I thought".

He said the people there were not so much worried about this year's crop failure. They were more worried about the survival of their cattle which was their main source of income.

In Kezi, the situation was worsened by the fact that while their cattle starved and had no water people could see plenty of water and green grass in the nearby Matopos National Park.

They could not understand why their cattle should not be allowed into the park, when game enjoyed green grass and had plenty of water.

Mr Msipa said that he would discuss with the Ministry of Natural Resources and Tourism and the Ministry of Lands, Resettlement and Rural Development the possibility of releasing water from a dam in the park.

He said the people of Kezi had also appealed to him to ask the Minister of Lands, Resettlement and Rural Development, Mr Moven Mahachi, to allow them to graze their cattle on the land that had been bought for resettlement while the ministry was working out its resettlement plans.

Five boreholes and five dams in Kezi had run dry and 38 dams had dried up or were about to dry up in Gwanda.

Mr Msipa said plans for Kezi included the building of a dam on Lingwe River and raising the Antelope Dam.

Gwanda will have two dams built on the Tuli River at Tuli Elliot bridge and Tuli gorge.

During the tour, the minister said he had stressed the need for self-reliance and co-operation between the local people and ministry officials.

CSO: 5000/5756

DROUGHT RELIEF, WATER DEVELOPMENT PROGRAMS ANNOUNCED

Harare THE HERALD in English 20 May 82 p 1

[Text] BULAWAYO.

THE Government has made available $20 million for drought relief in Matabeleland and is intensifying its water development programmes there by removing drilling machines from other provinces, the Minister of Water Resources and Development, Mr Cephas Msipa, said yesterday.

The minister was addressing councillors, officials of various Government agencies and local businessmen at Tsholotsho, about 100 km from here.

Mr Msipa and his deputy, Mr Joseph Kaparadza, are on a two-day tour of water development projects in Matabeleland.

The minister said it was Government policy that no section of Zimbabwe should die of hunger or lack of water.

"We have intensified our activities throughout Matabeleland in order to rescue all people who have been hit by drought.

"We are to sink 140 additional boreholes and establish about 60 water points. Other areas which require water are still being identified by the district councils," he said.

But he warned that the Government could only do so much at a time because of limited funds and a shortage of skilled personnel. It was up to the local authorities to mobilise their people into self-help projects.

Spelling out his ministry's policy, Mr Msipa said the Government was committed to providing rural communities with clean water.

"What is good for the urban people must be good for the rural people. We cannot have two nations, of the 'haves' in the urban areas and 'have nots' in the rural areas."

For development work to progress smoothly there must be peace. He noted that because of "some misdirected bandits", the provincial water engineer was finding it difficult to operate in some areas.

"These water supply projects are for communal people and we trust that the people will protect my staff," he said.

So far four piped water supply schemes had been completed, four more were under construction and 16 had been designed and construction would start in due course.

Mr Msipa said 69 water supplies were being operated and maintained by the Government, hundreds of boreholes had been sunk and equipped with hand pumps. Shallow wells were being lined with concrete as well as being equipped with hand pumps and in some cases windmills.

Mr Msipa and Mr Kaparadza toured piped water projects at Mbamba. They were accompanied by the provincial water engineer, Mr J. B. Nurton, a water development technician, Mr Clever Chatora, and the Tsholotsho district administrator, Mr J. Mtutuki.

Mr Chatora said the piped water scheme at Dingane school would involve the use of a windmill to draw water into two tanks.

The water would flow by gravity along pipes to the school and to four water supply points in the surrounding communal area.

"We do not want people to walk farther than 300 metres to get water. About 800 people and their livestock will benefit from the scheme," Mr Chatora said.

Three kilometres of piping was being laid underground, but the cost of the scheme had been cut to about $11 700 because people had helped by digging trenches.

At Mbamba the scheme supplied piped water up to six kilometres away for about 1 000 peasants and their livestock.

CSO: 5000/5756

DISCUSSION OF DDT CONTROVERSY CONTINUES

Harare THE HERALD in English 19 May 82 p 6

[From the Letters to the editor: "DDT: The Killer Which Government Must Control"]

[Text] SIR — It was just over a year ago, on April 11, that the main DDT controversy began; although it has been in dispute, in this country, for about five years now.

In case the public has forgotten the issues, I shall list them briefly:

More DDT is used in Zimbabwe than anywhere else in the world. Thus environmental contamination here is critical (cf. amounts of DDT found in fish eagles' eggs as well as in mothers' milk).

It is probable that approximately 20 species will be lost in the next decade.

DDT is dangerous, not only to animals but also to humans, as it is absorbed into the fats of any living organism and accumulates there. If weight loss is rapid and uncontrollable due to illnesses such as malaria or hepatitis or due to drastic dieting, DDT can be released into the blood system.

If a person is carrying 50 mg per kg of contamination, he will release ½ gm for every 10 kg he loses. Death may be caused by a combination of reasons, rather than only malaria or hepatitis.

Of course, DDT is still cheaper than any other pesticide and is necessary for malarial control, but as long as something is sold in large quantities it will remain cheap.

The altruistic Western countries have banned DDT in their own areas, but are willing to sell DDT to Third World countries to ensure a profit for themselves.

In December I asked for a public statement from the Government; once again I challenge them to state their attitude, in fact make the decision to ban DDT and use the alternatives which are available.

S. Wigham.

Amby.

THE Secretary for Agriculture, Mr R. M. Mupawose, replies:

The Ministry of Agriculture abides by the policy decision, taken in 1971, that organochloride pesticides like DDT should be phased out of use as soon as suitable alternatives become available.

The decision as to whether there is a suitable alternative must be based on proven facts so that the country's economy and production of food are not put at risk.

In the coming season, DDT will not be imported for crop protection use, as no allocation for foreign currency has been requested or approved. Consequently, because more expensive alternatives to DDT will be used, the foreign currency available for other agro-chemicals has been reduced.

It should be noted that while the dangers to certain fish-eating and meat-eating birds are well known, no evidence has been found of ill effects on man or other mammals from small accumulations of DDT although there has been an enormous amount of research trying to establish such effects.

The danger postulated by S. Wigham from weight loss during an illness is only speculative: it is based on the possibility that someone who is grossly overweight and has been exposed to a high level of DDT over a long period, so that he has an abnormally high level of DDT in a large amount of fat, may rapidly lose a great amount of body mass including adipose tissue.

Such cases would be very unlikely in Zimbabwe, although a single case has been known.

The ministry is continuing to monitor agricultural products for the presence of DDT and other pesticides.

The results of the survey to date shows that our food is extremely clean and acceptable by world health standards. Where the pesticide toxaphene was detected in some samples, immediate steps were taken to clear the source of contamination.

Meanwhile, research into alternative pesticides is continuing.

CSO: 5000/5756

ZIMBABWE

BRIEFS

DROUGHT CATTLE SALES--Bulawayo--In the five months from January to May this year, communal land farmers have sold the Cold Storage Commission 38 022 cattle and received $5,950 million in payment, a CSC spokesman said yesterday. The communal land farmers also sold 7 383 cattle to other buyers during the five months and withdrew 8 314 from sales when not satisfied with the price offered. Total cattle offered for sale was 53 721, the spokesman said. The average price paid by the CSC was $156,61, he said. He was asked to comment on remarks made by Mr Keith Harvey, chairman of the Cattle Producers' Association, at a CPA meeting in Harare on Wednesday that the response of the communal farmers to the CSC's cattle rescue operation was "sad." "The CSC purchases for the five months are up by 174 percent over those in the same period of last year, but they are certainly not high enough. The CSC is very concerned that with each day that passes the communal cattle are losing condition in the drought and their cash value is falling," he said. [Text] [Salisbury THE HERALD in English 5 Jun 82 p 3]

DROUGHT RELIEF FUND--Bulawayo. A drought relief fund for Matabeleland was announced last night by the chairman of the provincial drought relief committee, the Under-Secretary (Development) for Matabeleland North, Mr Jacob Mudenda. This was one result of the committee's inaugural meeting held in Bulawayo yesterday. The fund will be administered by a committee of four, with Mr Mudenda as its chairman. Other members are senior administrative officer for Matabeleland North, Mr B. C. Charlesworth, the provincial medical officer of health for Matabeleland, Dr Alan Pugh, and the provincial social services officer for Matabeleland North, Mr P. G. W. Ball. Mr Mudenda said the fund was in answer to public inquiries on how drought-stricken areas could be assisted. "We agreed as members of the provincial drought relief committee to accept donations in kind and financially," said Mr Mudenda. [Text] [Harare THE HERALD in English 13 May 82 p 1]

CSO: 5000/5755

SUMMER MEASURES ANNOUNCED TO COMBAT POLLUTION

Athens AKROPOLIS in Greek 29 May 82 pp 1, 9

/Excerpts/ Odd and Even Numbers

During the entire month of June, private vehicles will, by turn (odd and even-numbered licence plates), circulate between 5 pm and 5 am in the greater Athens area which is designated from the Aigaleon, Ymittos and Pendelion ridges.

At the same time, circulation of private automobiles and trucks is prohibited from 8 am to 4 pm in the area of the center of Athens which is designated by Alexandra, Ymittos, Khamosterna and Konstandinoupolis Boulevards.

A special case: As Deputy Mininster of Press and Information Dim. Maroudas said, the schedule is being changed only for the first 4 days of June because of the panhellenic school examinations taking place at that time. This means that the morning shutdown of the center of Athens will take place at 9 am instead of at 8 am, i.e., one hour later.

Industry Shutdown

1. In June and July, after agreement with representatives of workers and industrialists, the shutdown of operations, by turn, of especially noxious industries located in the greater Athens area, as shown in Table A, is established.

This shutdown, as well as the following, is to be coordinated with the use of the employees' annual vacation schedules.

2. A permanent reduction in the consumption of fuel and in production will take place in a number of industries during the summer (in accordance with Table B).

3. The operations of the following categories of industries will, by turn, be suspended for a period of 7 days a month:

- Brick, tile, etc manufacturing plants.

- Iron, brass and other ore foundries.

- Dye plants of all kinds.

No agreement has yet been reached between the industrialists and workers on the industry schedules. It was decided that for the time being, they may not be changed without the unanimous approval of their organizations.

Special Measures

During the summer, the above measures will be accompanied by the usual special first and second degree measures that will be implemented as has been done in the past during peak atmospheric pollution instances.

The announcement is accompanied by a detailed account of the government's anti-pollution policy for industry, traffic, means of transportation and vehicles. Among the items mentioned are the following:

- Up to the end of 1983, mass transportation means will acquire 100 new trolley buses (plus another 255 by the end of 1984), 650 buses and 60 new ISAP /Athens-Pireaus Electric Railways/ cars. A railway security system is being established and three new train depots will be built. Private vehicles will be assured of the possibility of using liquid gas.

- By the end of 1982, the first vehicle technical inspection center will go into operation.

- In each city planning office of Athens and Salonica, three inspection teams will be set up to oversee the proper operation of boiler rooms in central heating units of all buildings, as well as the inspection of fuels being used.

The announcement finally stresses that the definitive solution to the pollution problem will take time, great study and effort, large expenditures and significant social costs and sacrifices. As an example, it mentions that in London and Los Angeles that had similar problems, systematic efforts were needed that went beyond 10 years.

5671
CSO: 5000/5330

DATA ON POLLUTION CONSEQUENCES

Athens AKROPOLIS in Greek 27 May 82 p 1

/Text/ A medical congress recently came out with some disquieting revelations about the consequences of pollution on the health of the residents of Athens. As revealed to parliament yesterday by New Democracy Deputy N. Anastasopoulos, also a doctor, the 8th Panhellenic Medical Congress which took place a few days ago "came out with frightening revelations about the dangers of pollution."

- Infant mortality has reached 27 percent.

- Prenatal mortality has reached 13.8 percent in Athens as compared with 7.95 percent in other regions of the country.

- Miscarriages by pregnant women has tripled in the past 2 years.

Mr Anastasopoulos stressed that the saddest part was that in this particular area, in a few years time cases /of death/ will have increased three or five times or even 10 times, and no one can know what kind of monsters Athenean women will give birth to after years of toxic influences caused by pollution.

Emphasizing this tragic aspect of the pollution problem, Mr Anastasopoulos said that "we must all raise our voices in cooperation and not in protest" and he recommended that an inter-party committee be set up to study the issue.

Minister of Urban Planning Tritsis did not give an answer on the issue of having an inter-party confrontation to the pollution problem and he said that "the tried international measures are controls over industries, restrictions on the use of private vehicles and restrictions on other noxious uses."

5671
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END

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28 JUNE 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 359

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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28 June 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 359

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INDIAN DELEGATE ADDRESSES NAIROBI MEETING

Calcutta THE STATESMAN in English 15 May 82 p 5

[Article by Chander Mehra]

[Text] NAIROBI, May 14--India made an impassioned plea today for frankness in discussing the financial constraints facing the United Nations Environment Programme.

Addressing the UNEP governing council's session of a special character here, the head of the Indian delegation said it would be unrealistic to discuss the organization's plans unless a solution was found to the problem of funding. "The matter is so important that it must be discussed in detail and with complete frankness," said Mr B. B. Vohra. Inflation was not the only reason for the present state of affairs he said, suggesting that some of the activities of the UNEP lacked the credibility required "to persuade donor countries to come to its rescue."

"This is not a matter to be merely mentioned in passing and then swept under the carpet," Mr Vohra said drawing attention to the UNEP cutting back half its programmes and referring to the assertion on the opening day of the conference on Monday of the executive director, Mr Mostafa Tolba, that no organization could be expected to plan effectively when it did not know when or how much funding would be provided to it.

The UNEP should not draw up an overly ambitious programme, but confine its activities only to areas of priority unless the question of funding was resolved. This would help the organization improve its credibility and prevent the frittering away of limited resources on a variety of activities, Mr Vohra said.

The UNEP, he added, could have accomplished much more than it did in the past 10 years since the Stockholm conference, if it had been more selective in determining its priorities. "But mistakes of the past should not be repeated while planning for future," he said.

Suggesting India's priorities, Mr Vohra said the most important environmental problem concerned the damage to and degradation of natural resources in the developing countries.

The problems of land degradation, soil erosion, deforestation and desertification were of the most crucial importance and should be treated as such if "the very basis of economic development is to be sustained and ecological disaster avoided"

Continued land degradation had the same effect on a country's economy as an unchecked haemorrhage on the health of a human body, he said, adding that it was the most serious threat to the environment and to the very survival of many developing nations.

The need to arrest desertification, deforestation and land degradation was a matter of life and death for developing nations. "The countries have no hope of conquering poverty and lifting their growing populations from a sub-human level of existence unless their degraded land can be saved from further deterioration and brought back into production," Mr Vohra said.

He also called for the need to preserve the threatened species of flora and fauna in tropical and sub-tropical forests and for controlling industrial pollution of water, land and air.

Mr Vohra concluded by saying that there was no reason for the UNEP to feel diffident about its future, provided it took account of the present realities, reordered its priorities and spoke out boldly in the cause of the environment.

AFP adds: In a move to attract world attention to the widespread problem of deforestation, which has reached the rate of 14 hectares a minute, the Kenyan Environment Minister and chairman of the 10th anniversary conference of the UNEP, Mr Peter Oloo Aringo planted a number of trees outside the conference centre, here yesterday.

CSO: 5000/7058

BANGLADESH DELEGATE SPEAKS AT NAIROBI MEETING

Dacca THE BANGLADESH OBSERVER in English 19 May 82 p 1

[Text] NAIROBI, May 18:—Bangladesh has strongly proposed for effective environmental laws to ensure undisturbed flows of international rivers at the special session of the Governing Council of the United Nations Environment Programme (UNEP), reports BSS.

Mr A.M. Rashed Chowdhury Bangladesh representative at the nine-day session which concluded today stressed that the laws must also be enforced to protect the environmental and ecological balance through regional and international co-operation and help minimise the human sufferings caused by man made activities.

The UNEP session was inaugurated by the President of Kenya Mr Daniel T. Arap Moi on May 10 at the Kenyatta International Conference Centre in Nairobi. Representatives from member nations including four heads of state and a number of Ministers responsible for environmental activities participated in the session.

Over 80 representatives from leading Non-Governmental Organisations (NGO) on environment from different regions of the globe and the representatives from various United Nations International Land Inter-governmental organisations were also present at the session as observers.

The objective of the session was to take stock of the achievement made in implementing the Stockholm plan of action programme during the last ten years in predicting protecting land promoting the world environment and identifying the major environmental trends and problems to be discussed by the U.N. systems and work out future plan of action for the coming decade.

The Bangladesn representative said that since all the major rivers in Bangladesh originated across the border they were subject to pollution besides disruption of water flows in the upstream because of diversion and other activities.

He said that this diversion of water in the upper reaches took an acute shape during the past decade which adversely affected the economy ecology and overall environment of the country.

Mr. Chowdhury said that river water was the life and death question for the people of Bangladesh and unless immediate attention was given to the problem one-fourth part of the country would soon convert into deserts with serious environmental and ecological consequences.

He said that already there had been signs of mushrooming desert patches in the Ganges basin in Bangladesh which originated in Nepal and flows through India and Bangladesh before falling into the Bay of Bengal.

Referring to the recent UNEP surveys bearing out the above facts the Bangladesh representative expressed his gratefulness for including the country in UNEP regional programme to combat desertification caused by upstream diversion of the Ganges.

He said that withdrawal of water in the upstream during the dry season also disrupted navigation, irrigation forest fisheries and affected food production in the country. This also affected ground water level and availability of drinking water he added.

Terming poverty at thhe single largest factor responsible for the degradation of the environment in Bangladesh Mr. Chowdhury said that despite the est efforts of the Government it could not provide the minimum requirements in terms of housing sanitation and drinking water and education to its teeming population. He suggested that this situation could only be solved through a comprehensive and intensive development which would be environmentally sound and suitable.

The Bangladesh representative said that unless the economic condition and self-sufficiency of the people could be developed it would be very difficult to check the adverse environmental trends in the country.

Lauding the role of UNEP as a catalytic agent Bangladesh proposed for decentralisation of its activities on the basis of regional programmes for a greater involvement of the people concerned in solving their problems peculiar to them.

Expressing the commitment of Bangladesh for a better future and better environment for the mankind he said that this could only be achieved through the cooperative efforts of all nations and communities in the world.

Mr. Chowdhury pointed out that on the contrary countries were competing each other in the research production and use of armaments and harmful chemicals in various perverted forms to have an edge over the other as the killer of mankind. He expressed concern if the world community has the will and power to stop this competition and translate the concerns and fears of global environmental problems into reality.

Briefing the environmental activities in the country during the last decade he referred to the promulgation of Water Pollution Control Act in 1973 and the Environment Pollution Control Ordinance in 1977 for the protection preservation and conservation of the overall environment.

Mr. Chowdhury also lauded the role of the NGO's and the Press for creating mass awareness about the need of a clean environment and making the Government campaign a success.

CSO: 5000/7059

AGGRESSIVE REAFFORESTATION PROGRAM URGED

Bombay THE TIMES OF INDIA in English 8 May 82 p 8

[Article by V. P. Agarwala]

[Text] INDIA is at present faced with the most serious threat it has ever known. It is a threat not from without but within. To put it bluntly, large parts of this country will become a desert within half a century at most if we do not put a stop to the damage we are ourselves inflicting year after year on the eco-system. Out of the total reporting area of 305 million hectares of land, about 145 million hectares are assessed to be suffering from varying degrees of soil erosion and degradation. At least five million hectares of forest land has been lost during the last 30 years to agriculture, the rehabilitation of persons displaced on account of the construction of multipurpose dams and other uses. Much, much more has been wholly or partially denuded by illegal felling. Regeneration is failing miserably to keep pace.

The pressure on the land has reached frightening proportions. The human population of the country has virtually doubled from 35 crores in 1949 to 68.4 crores in 1981. The cattle population has also increased greatly. For instance, the goat population has increased to 68 million in 1972 from 47 million in 1951.

Forests are a powerful ecological factor affecting the environment in India, as elsewhere, in the world. The moderate extremes of heat and cold, increase local precipitation, enrich the soil with fallen leaves and debris and increase its depth, porosity and water storing capacity. In hilly areas forests retard the run-off of water, feed the underground springs, promote a perennial instead of a seasonal flow in the streams and tend to prevent sudden and violent rises in the water level in the rains. Thus forests help to prevent soil erosion, landslides and silting and the consequent danger of floods. They also arrest shifting sands.

The destruction of the forests reverses all the above beneficial effects and this is just what we have been witnessing in the last four decades. In our hilly areas we have destroyed the forests, cultivated fields for a short time on steep slopes until rains have swept away the soil, and allowed flocks of sheep and goats to browse and graze on hill-sides without restrictions, until the vegetation has been destroyed and the earth and rocks have been laid bare. Now nature is taking a terrible revenge. Soil erosion is a creeping death. Mr. B. B. Vohra, at present chairman of the national committee on human environment, who has closely studied land problems in India over a long period has rightly expressed the view that for a major economic and environmental transformation in the country, at least 50 million hectares of land should be afforested as early as possible.

Important Function

The other important function of the forests is to produce wood and other forest products. In India an impending firewood famine stares millions of our people in the face. The rural poor have traditionally picked dead branches and twigs from the forest floor to meet their fuel needs. But as the forests have dwindled, they have faced increasing hardship. One way to meet their needs is to plant fuelwood trees. But since 40 to 50 per cent of *any* tree can only be used for firewood, a more basic requirement is to increase the area under trees irrespective of whether it is for fruit, timber or fuelwood.

Although India has, theoretically, 75 million hectares of forest, the productivity of these in most cases is very low. The India indicative plan for forestry (1965) presented by the ministry of food and agriculture envisaged a production of 32 million cubic metres of industrial wood by 1985 including 12 million cubic metres from man-made forests. Unfortunately, there are no signs at all of even approaching this figure, and production has stagnated around 10 million cubic metres upto 1979-80. The low productivity of forests can be typically illustrated by the west Dehra Dun forest division of U.P. The Dehra Dun forests which have been scientifically managed for 120 years should have been the model for forest management. Despite this the current working plan for west Dehra Dun division for the period 1979-80 to 1988-89 for an area of about 48,000 hectares with excellent soils and high rainfall prescribes an yield of less than 0.2 million cubic metres per hectare! The potential is at least 20 times this figure. The main reasons for this are that regeneration has failed and Lantana—a weed imported into this country from Australia during the last century—covers extensive areas, stifling the growth of new saplings.

Vital information on the growing stock in our forests, on the annual increment and losses, and on potential increment is lacking and what is available is often inconsistent. But tentatively, the total growing stock in the Indian forests is estimated at 2,400 million cubic metres valued at Rs. 96,000 crores at the present level of prices. The annual increment in our forests is estimated at 60 to 70 million cubic metres. But with optimal inputs this is capable of being increased several times over. A forest survey of India already exists and it is essential that the ministry of agriculture submits an annual report to parliament based on scientific forest surveys, the forest area and the total growing stock and the increment by states. In the absence of such a report management will remain a game of blind man's buff.

An aggressive programme of reafforestation can not only reverse environmental damage, and meet the country's need for fuel, timber, paper and other products, but also solve the rural unemployment problem. It is estimated that forests now provide employment to above five per cent of India's population. Major plantation programmes will increase this dramatically. For example, one million hectares of social forestry using coppice planting of quick maturing trees can generate 3.4 million *man years* of employment in the establishment phase and 2,20,000 permanent jobs every year.

Unbelievable Figure

In view of these manifest advantages, what is truly surprising is the way in which our country has lagged behind in embarking on a massive reafforestation programmes. But other countries have not. Under a massive afforestation programme in China almost unbelievable figure of 70 million hectares have been reafforested between 1950 and 1970. (Compare this to the total area theoretically under forests in India of 75 million hectares.)

Outstanding afforestation work has also been done in the 1970s by South Korea under a different form of government. The government devised a prominent new forest policy and law. Village Forestry Associations (VFAs) were formed all over the country. The VFAs are a part of a nationwide non-governmental network — the Korea national federation of forest associations with its headquarters in Seoul.

In India by contrast the picture remains gloomy. But the one bright spot is the sea-change that has occurred in the last four or five years in the attitude of the state governments towards their dwindling forest wealth. Nowhere is this more apparent than in the social forestry programmes that are just beginning to get under way. In 1982, the country plans to plant 1.9 billion (190 crore) trees under the various social and commercial forestry programmes! The forest nurseries in various states are flush with plants. Assuming that 2,000 trees are planted per hectare, this will amount to raising forests on 9.5 lakh hectares of land. Of this 190 crores, 79 crore plants are being distributed to villagers and village panchayats for planting on field bunds, in their compounds, on village common lands and in block plantations.

Among the various species of trees being raised in the nurseries today are fruit trees like *kathal*, (jackfruit), mango and guava; oilseed trees like *mahua*, *karanj* and *neem;* timber trees such as eucalyptus, teak, sisso, chir and deodar; and finally, fuelwood trees such as casuarina, Acacia auriculiformis and prosopis and fodder trees like bamboo and subabul (ipil-ipil) which is one of the fastest growing trees in tropics and excellent not only for fodder but also for timber.

If this massive plantation programme is accomplished, this will herald the start of a new revolution in the countrywide. Social forestry programmes are already making headway in the states of Gujarat, U.P., West Bengal, Bihar, M.P. and Tamil Nadu and are likely to be launched in Jammu and Kashmir, Karnataka, Maharashtra, Haryana and other states. As Erik Eckholm has pointed out, social or community forestry is not a technology but it is a process of social change that requires the continuous participation of whole communities in planning and problem-solving. Government and voluntary agencies can help to create a public consciousness of the need and indeed profitability of successful tree-raising and thus help to improve the environment and the finality of life,

CSO: 5000/7057

INDUSTRIAL POLLUTION, OVERFISHING SAID TO RUIN GULF OF THAILAND

Bangkok THE NATION REVIEW in English 19 Mar 82 p 6

[Text] A SENIOR United Nations marine environment expert said yesterday that industrial pollution in the upper Gulf of Thailand is so bad that if nothing is done by the end of the century the Gulf will turn into a "dead sea."

"The way things are going as it is, the upper Gulf of Thailand is likely to turn into a dead sea by the end of century," said A.H.V. Sarma of the Environmental Coordination Unit of the Executive Secretary of ESCAP.

Sarma said that the biggest cause of water pollution in Thailand is urban pollution in Bangkok as domestic waste is deposited into the city canals, which is in turn dumped into the river.

Sarma, speaking at a seminar on environment at ESCAP, urged the Thai Government to take immediate steps to improve the situation.

"If anyone in Thailand is dreaming of cleaning up the upper Gulf of Thailand, he should start it right here at Chao Phya River," Sarma told the audience.

Sarma blamed the government directly for not taking immediate actions to curb the pollution of the river, citing bureaucracy among the various departments.

"The government has commissioned a lot of consultation studies, but has not implemented any programme to improve the situation," said Sarma. "I don't think those programmes have been properly evaluated.

"There used to be a joke that the oceans are the waste paper baskets of land, but the sad thing is that it is no longer a joke," he told the participants. "We don't have to be told again that tons of domestic wastes are being dumped into the oceans. "And there is no exception for the Chao Phya River."

He said industrial waste, agriculture waste and fertilizers dumped into the water produce a dirty effect as a whole on the environment and, in particular, destroy oxygen.

"When you don't have oxygen you start reporting about the dead fish," he said.

Citing the findings of the United States National Sceince Academy, he said that over two million tons of DDT has been produced since it was discovered in the early 1930s. Some 25 per cent of this has been collected in the oceans."

Sarma said years of study indicated that in Thailand the river that flows down from the north to up till Ayudhya province is "so clear you can drink the water," but from Ayudhya down to Chao Phya River it is completely devoid of oxygen.

He said Thailand, the Philippines and India have the worst industrial pollution in their rivers.

"Chao Phya River, Laguna Bay (in Manila) and the Hoogli River (in India) are competing for a first prize in terms of the most polluted river," said Sarma, adding that for his money Chao Phya River is easy winner.

"Industrial pollution, detergent and domestic waste poses the most serious threat to our marine environment," said Sarma.

The six-day seminar on environment – with special emphasis on the marine environment – is currently being held and participated by journalists from Indonesia, India, Sri Lanka, Bangladesh, the Philippines and Thailand.

Sarma said fishing in the Thai rivers has substantially dwindled since the introduction of mechanization in 1960. In 1960, he said, local fishermen caught over 60,000 tons of fish while the number increased to over a million in 1971.

He said degregation of marine pollution is such that in 1972 an average catch was 100 kilogrammes per hour.

"Now it is down to only eight kilogrammes per hour, not enough to pay for the gas," Sarma said.

According to him, world consumption of fish is put at 12 kilogrammes of fish per year per capita, with Japan at 120. "In Thailand the official figure is 60, but I think it is down to 30."

The situation has become so serious that Thai fishermen now are fishing elsewhere, such as Bangladesh.

"Fishing in Thailand is not viable anymore," said Sarma. He also blamed "overfishing" as one of the reasons for the problem.

One of the solutions Sarma offered is the blocking of the city canals to stop flows of domestic waste into Chao Phya River. He said this could be done easily as there are not over 40 canals in the city.

The seminar also briefly engaged in a somewhat heated debate whether it should be the role of the government or an international agency to help alleviate the environtment problems in cities throughout the region.

In response to a question posed by Ruben Pasqual, a reporter from the Manila-based Business Daily who asked why ESCAP had not done much in the area of environment in spite of knowing the problem exists, Sarma said cities in the region should not rely heavily on outside help.

"Why don't you do it yourself?" he snapped. "Why you have to rely on outside agency to work for you?"

"Well, what happend to the action plan adopted by the ministerial meeting in Manila?" Pasqual, not budging an inch, shot back.

"The action plan adopted during the meeting in Manila is still on paper and being worked out," Sarma replied. "How do you expect the action plan which is on the paper and not put together to work?"

Sarma was referring to the action plan for environmental programme adopted during the ASEAN Ministerial meeting in Manila in April, 1981.

Other panelists taking part in the seminar included Dr Surapol Suda of the Department of Marine Sciences, Chulalongkorn University, and Dr Surin Setamanit, Director, Institute of Environmental Sciences, Chulalongkorn University.

The panelists spent considerable amount of time discussing who locally should bear the responsibility to effectively carried out the environmental issue, though none of them came to any conclusion.

In addition to their repeated attempts to seek the media support, they more or less concluded that a strong political base is needed to effectively launched a nationwide environmental issue to alert the public about the threats of environment.

Dr Sunit, who said little during the discussions and prefered more to listen, perhaps delivered the most touching remark at the conclusion of the seminar.

He said: "Environmentalists must be more careful and they have to be very adapting to the environment issues, just like the environment itself."

CSO: 5000/5759

EGAT DAM COULD DAMAGE FOREST AREA

Bangkok BANGKOK POST in English 10 May 82 p 5

[Article by Wirasak Salayakanond]

[Text] **THE state-owned Electricity Generating Authority of Thailand (EGAT) is under heavy fire from environmentalists for advocating the construction of more dams as a way out of the energy squeeze.**

"EGAT is acting like a commercial contractor. It is trying to obtain more projects for its own survival as a state corporation," Pairoj Suwannakorn, chief of the Wildlife Conservation Division of the Forestry Department, said.

He said that more dams mean more jobs for EGAT personnel. "Naturally, contractors are eager to get a government contract, and the EGAT is obliging them," he charged. Three huge dams are now in operation with two more under construction.

A leading Thai environmentalist, Mr Pairoj blames the dams for the massive destruction of virgin forests. He claims that unbridled forest destruction has already caused the denudation of 419 square kilometres of forest land in Kanchanaburi Province within the Srinakarin Dam site. Also endangered by the Khao Laem Dam is an area totalling 353 square kilometres, including the whole Sangkhlaburi District, also in Kanchanaburi.

If pushed through, the Nam Choan Dam will result in the destruction of 137 square kilometres of conserved forest area. Not only are the areas above the dams inundated but the forests surrounding the reservoirs are also cut down.

Mr Pairoj said that EGAT has already started building a road from Srinakarin Dam to the proposed site of the Nam Choan Dam on the upper Kwae Yai River. The 140-kilometre highway is needed for transporting heavy equipment and construction materials needed for the Nam Choan Dam.

COMPLAINT

By building the road through a forested area, EGAT has opened the floodgates to an army of forest poachers, who have entered the Erawan National Park, the Srinakarin National Park and two forest replanting areas, according to Mr Pairoj.

The Wildlife Conservation Division of the Forestry Department, a leading opponent of the road-building project, complained that EGAT started felling down trees although the Nam Choan project has not yet been approved by the National Economic and Social Development Board nor by the Cabinet.

The campaign against the Nam Choan Dam project has forced the Cabinet to issue a work suspension order pending a government review of the project.

But environmentalists predict that the Cabinet action has only created a "lull before the big storm." The "illegal loggers have already found their way into the forest reserve and there's no stopping them from smuggling out logs," they added.

Thailand's forested area totals 29 million hectares, or about 25 per cent of the country's total land area. But the onslaught on the forest is going on at an alarming pace. Last year, the United Nations Environment Programme reported that about 1.4 million hectares of timberland in Thailand is destroyed every year. If this rate of destruction is unchecked, the country's forest reserves would be totally depleted in 21 years.

Said Mr Pairoj: "We are not against building dams *per se*. What we are against is the destruction of forests. In building dams, we must carefully weigh the advantages and disadvantages of the projects, particularly in relation to the damage it inflicts on forest and other natural resources."

He explained that even the Forestry Department was opposed to the construction of several dams in Kanchanaburi after its own survey showed that the resultant damage to the environment was far more serious than EGAT had projected.

"You just don't assess the harmful effects of massive tree-cutting on the environment by the number of trees that would be destroyed by the construction of dams in Kanchanaburi, as EGAT has done. You have to consider the possible adverse effects of these projects on the whole ecological system," Mr Pairoj said.

To function properly, the dams must receive enough water. In the case of the Kanchanaburi dams, the water comes from "catchment areas" or watersheds. Ironically, many dams in Thailand were constructed far from "catchment areas." As a result, the volume of water that flows into these dams is not even adequate for irrigation purposes.

The catchment area for the proposed Nam Choan Dam is situated partly in Umpang district of Tak Province and partly in Uthai Thani Province. But the forest cover of the entire catchment area has been destroyed.

WARNING

Forestry officials have warned that it would take several years for the proposed dam to store water enough to generate electricity. But EGAT officials dismiss the dangers posed by the destruction of forest covers as exaggerated. They insist that the country's long-range requirements for electricity far outweigh the problems that would be created by the resultant destruction of forested areas.

At present, the total generating capacity of EGAT is 4,980 megawatts. Of this, 1,379 megawatts come from hydropower plants generated by dams. Over 2,400 megawatts come from oil and gas-fed power plants.

No clear winners — only losers — are expected to come out of the raging controversy over EGAT's projects. Whatever happens, Thailand would be denied vast sections of an already dwindling forest reserve. And, as environmentalists claim, this could create a bigger problem than the benefits the dams are supposed to generate.

5000/5759

ENVIRONMENTAL PROTECTION DISCUSSED, GUIDELINES PROPOSED

Hanoi TO QUOC in Vietnamese Apr 82 pp 19-22

[Article by Dao Ngoc Phong, M.S.: "The Environmental Pollution Situation in Our Country Today"]

[Text] The environment--the framework within which each person works and relaxes--is a unified entity encompassing the soil, water, air and plant and animal life (from the blades of grass and branches of trees to man) that is closely related to the technological factors created by society that have an impact each minute of each hour. This impact is seen in the fact that whenever a change occurs in a factor, it immediately influences the other factors and leads to subsequent changes. This is the result of natural processes but it is primarily the result of the activities of man. At a time when practically every developed capitalist country is facing the real danger of witnessing the destruction of the natural balance through the misfortune of being caught between the pincers of the severe vestiges of history, including the serious destruction of the natural environment and the increasingly harmful consequences of industrialization and urbanization, we are discussing environmental pollution in our country, a socialist country with many special characteristics. To begin with, we must mention the past in which the colonialists and feudalists left behind and from which we have inherited a brutally exploited natural environment, an environment plundered of its natural resources, an environment covered with gloom by very long periods of biological pollution and malnutrition (diseases, death and starvation), an environment which, although not hit by the waves of urbanization and industrialization, is not without waste matter from the cities (the pitch black To Lich River, the dark plumes from the smokestacks of cement plants and so forth) and from the vast rural areas (first the prince, second the...). On top of this came the serious destruction caused by the U.S. imperialists in recent decades, concerning which we are unable to determine the full magnitude of the tragedy caused by the poison agent orange and the B-52 bomb craters across our beloved land, especially in the South. Today, our country is totally unified and independent. We are building socialism but the fact that our methods of exploiting the natural environment as well as organizing production are not truly modern is also a cause worth mentioning when examining environmental pollution in our country.

Generally speaking, a comprehensive view of reality is seen in the following results of an investigation into the disease situation in Vietnam:

For every 100,000 persons, there are 23.12 cases of cholera, 4.66 cases of typhoid and paratyphoid; 159.16 cases of amebic dysentery; 978.98 cases of diarrhea and intestinal diseases; 130.08 cases of tapeworms and other worms; 916.69 cases of other infectious diseases and parasites; 1.87 cases of leptospirosis; 1.94 cases of plague; 2.15 cases of diphtheria; 8.95 cases of viral meningitis; 137.78 cases of hemorrhagic fever; 299.81 cases of malaria; and 31.40 cases of fungus related diseases. Thus, infectious diseases and parasites are still widespread throughout the country. These diseases are closely related to living conditions, economic conditions and social conditions (the pollution of the surrounding environment, land, water and so forth).

As regards occupational diseases in our country between 1976 and 1980, diseases caused by Silicose dust accounted for 94 percent while illnesses resulting from noise accounted for 4.27 percent and illnesses caused by chemicals constituted 0.82 percent of the nearly 2,000 cases. These facts show that occupational diseases have begun to appear in our country.

The disease situation mentioned above is due to the fact that the surrounding environment (soil, water, air and vegetation) and the work environment within industry are being polluted.

The soil is most seriously polluted in the rural areas. Research of soil samples by Le Vi Hong and colleagues showed the following: of the total number of samples, very dirty and dirty samples constituted a high percentage, 70-81 percent (the ratio of N. albumin over organic N.); samples highly polluted by worm eggs constituted 71.7 percent, with 60 percent of them coming from building foundations.

The soil around privies contained intestinal tract phage (+) with E. Coli 0111, Sh. Typhi, Sh. Flexneri, Sh. Bcydi and Sh. Sonnei.

Water is also polluted, especially water sources in the countryside.

Virtually none of the effluence of factories and enterprises are treated before being dumped into rivers, thereby creating serious pollution. The effluence of the majority of factories and enterprises contains substances that cannot be easily broken down by biological organisms, as seen in the very high level of oxygenization (DCO), 92-1,440 mg02/1, and the low need for oyygen in a 5-day period (DBO5), namely, 0.8-120mgO_2/1. The biological pollution of river water, such as the Red River, is also high in spots, especially during the flood season (aerobic bacterium: 1,000/1cc; Coli Index: 11,100/1; Melchii: 10/10cc).

Especially deserving of attention is the air pollution in a number of industrial cities, such as Haiphong, Viet Tri and Hanoi. Through a survey conducted in

Hanoi, we have found that the level of SO_2 in the industrial area is 14 times higher than the standards permitted for residential areas, the level of CO_2 is 2.7 times higher and so forth.

At 68 positions where measurements were taken, the dust and noxious gases from 16 typical factories in the chemical sector exceeded permissible levels.

In addition to the pollution of the ground, water and air in the surrounding environment, new factors are now emerging in our country that also cause pollution:

Noise pollution in the major cities has reached the alert level. The Institute of Housing and Public Project Design investigated the level of noise in the housing areas and child care centers of Vinh and Hanoi in 1977 and found that noise levels range from 55 to 68 dBA (the tolerable limit is 60 dBA).

Another form of pollution is radioactive substances in the air at a number of installations that use sources of radioactivity. Although the surface background at these installations is approximately the same as the natural background (0.02 R per hour), in areas in which radioactive sources are located and mixed, the level of pollution is high. In a number of industrial complexes, such as Viet Tri, Hanoi and Haiphong, surveys have also been made for radioactive pollution resulting from the burning of energy in match factories and so forth as well as pollution of water sources.

In particular, within agriculture, we are using a very large quantity of insecticides and chemical fertilizers, such as Psudin, Kitasin, DDVP, Methyl-Parathion, Metaphos, Parathion, HCN, 2,4D, DDT, Zineb, Futadan, Bassa, SeWeng, ZnP, etc. In the two insecticide warehouses and 14 insecticide production units in Tien Giang, we found that 100 percent of the persons checked who have come into direct contact with pesticides have undergone physiological changes (such as a reduction in the level of the hormone Cholinesterase). The embryologic genetic effects of insecticides and herbicides have been studied by Trinh Van Bao and colleagues in humans and animals, especially among agricultural workers (abnormalities in the number of chromosomes are 4.19 percent ± 0.16 while abnormalities in chromosome structure are 2.68 ± 0.5). Pham Thi Kim Cuc has studied the DDT content of mother's milk and fat tissue in a number of areas in the North (DDT in mother's milk averages 6.05 ± 1.32mg/1DDT; in fat tissue, it averages 22.3 ppm).

The DDT content in the living environment is as follows:

Test Sample	ppm	Test Sample	ppm
Well water	0.2	Tomatoes	0.02
Hog Fat	1.5	Beets	0.01
Pork	0.60	Spinach	0.01
Kohlrabi	0.20		
Seed Paddy	0.08		
Rice	0.05		
Western Potatoes	0.05		

Le Dinh Cong has studied the concentration of Metaphos in the air around persons spraying this insecticide and found that the concentration was two times as high as the permissible standard (0.232 per cubic meter) and found a marked impact upon the health of persons coming into direct contact with it (headaches, anxiety, dizziness and a complete reduction in the level of Cholinesterase).

Harmful effects to the environment caused by the chemical poisons spread by the United States in South Vietnam have been detected in our country. Vo Qui and colleagues have presented new, specific data gathered in the different jungle areas on which poisons were spread from a few times to many times, such as Nam Can, Ca Mau, Black Virgin Mountain and Tan Bien (Tay Ninh), the Ca Pass (Phu Khanh) and A-luoi (Binh Tri Thien). The permanent harmful effect of the chemical poisons of the United States upon the vegetation, the soil and the animal kingdom in the different types of jungle as well as in the body of man are clear.

In general, the disease situation among our people at this time basically falls within the disease model of the developing countries, although they differ in degree; at the same time, we also see a number of diseases that fall within the disease model of the developed countries. One of the primary causes of the disease model presented above is living, economic and social conditions (including the environment). The universal infectious diseases are the result of the pollution of the surrounding environment (the soil, water and so forth). The fact that diseases related to industrialization and urbanization have begun to appear means that the living environment is being harmed, even though only on a small scale now.

We completely endorse the opinions expressed by Minister of Public Health Vu Van Can when summarizing the work of the sector: "We must quickly develop beyond the stage of preventing and combating infectious diseases, parasites and malnutrition and reducing the population growth, which are characteristics of a developing country; at the same time, positive and effective steps must be taken to prevent the diseases encountered in the developed countries that are beginning to appear. One of the basic measures is fighting environmental pollution. We must organize sanitation control, protect the soil, water and air, formulate sanitation regulations and sanitation standards in construction, in industrial development, agricultural development and the clearing of wilderness. At the same time, we must take measures to prevent and combat, manage and extinguish epidemics and administer mass vaccinations in accordance with a unified schedule in order to widely immunize the people. We must take scientific, systematic and truly thorough preventive measures in order to develop beyond the stage of illness of the underdeveloped countries."

In our opinion, in addition to preventive medicine, we must realize that the persons and tasks involved in resolving the problem of environmental pollution are clearly related to many sectors. All of the various degrees of research, from discovering theory to applying technology, require the combined efforts of many scientific sectors, especially ecology and geography. Besides this, it is necessary to intensify the management of the environment in our country. The first stage is hygiene management, the most important aspects of which are observing the state of the environment and evaluating its harmful effects upon man. To begin with, efforts must be focused on observing the environment at densely populated places and in population areas of greatest activity. Then, we must coordinate with related sectors to manage geographical systems (agricultural technical systems, the environment of the industrial areas, the urban environment, etc.). In this effort to observe the environment, we must give attention to the special natural characteristics of our country and the ability of its environment to cleanse itself (the hot, humid tropical environment rich in solar radiation). Through this, we will see that unique aspects are involved in preventing and combating environmental pollution in our country, ones that are quite different from many other countries of the world. Only then will we enter the stage of managing the biosphere and control, inspect and predict the changes that might occur in larger areas of an international nature.

In the strategy for combating environmental pollution today, we must, in the immediate future, transform the environment in the countryside and cities and eliminate the diseases caused by biological pollution that frequently occur in the underdeveloped countries. Besides this, we must give our attention to measures (even in the planning stage) for preventing and combating pollution in industrial areas and newly constructed urban areas if we want to quickly prevent chemical pollution (from causing diseases such as those being suffered in the developed countries at this time). Finally, our permanent task is to protect the biological balance by means of making reasonable use of our country's natural resources. The work of the public health sector is to improve the working conditions, housing and relaxation of the people at places where people have long lived and in newly opened and constructed areas. It is necessary to treat the effluence of industrial zones in order to avoid polluting rivers, the soil and the atmosphere. Essential products must be free from chemical and biological pollution. Attention must be directed toward curbing the indiscriminate use of pesticides and taking steps to protect the safety of persons who spray pesticides. Education and agitation regarding protecting the environment must be more widely organized; environmental protection councils of the masses must be established and programs for teaching environmental pollution must be incorporated at schools. The state must promulgate laws and directions concerning environmental protection; establish specialized agencies that have the authority to investigate, control and protect the environment; and gradually establish local pollution observation stations in the form of a widespread network so that we can forecast changes in the environment and their possible harmful effects in special situations.

The practical objective of this effort is not to protect, but to guide the correct development of the reciprocal relationship between man and nature. Man is dependent upon the surrounding environment and is formed within this environment; therefore, protecting the living environment is protecting its balance. The ultimate objective of environmental protection measures is to create favorable conditions for man to lead a wholesome material and spiritual life.

7809
CSO: 5000/5757

HIGH COSTS HAMPER ENVIRONMENTAL PROTECTION

Hanoi TAP CHI HOAT DONG KHOA HOC in Vietnamese Apr 82 pp 10-11

[Article by Nguyen Khue: "The Chemical Industry and Environmental Protection"]

[Text] Protecting the environment is a pressing need of our planet at this time, the importance of which goes beyond the borders of nations and regions. Our party and state have attached appropriate attention to protecting the environment; this concern is most importantly and clearly evident in each related policy, especially in the policies regarding economic construction, in the regulations governing capital construction...

However, this is not to mention the serious destruction of the environment in the wars waged by the U.S. imperialists and the Chinese expansionists or the fact that many problems still exist in industrial construction and production that adversely affect environmental protection, which, if not promptly resolved, will cause even greater harm.

In the first years of building the North, we lack the conditions, time and experience needed to completely plan industrial and population areas and lack much basic investigative data as well as long-term plans for building each industrial complex. Advancing from a poor agricultural country ravaged by continuous war, we must urgently build a number of the most necessary industrial installations in order to meet minimum national defense and national economic needs. Because our capital and supplies are limited, but capital investments in environmental protection sometimes constitute a very large percentage of the total investment in capital construction at a time when our environmental protection technology does not meet requirements, it is unavoidable that the environment is affected at one time or place or another.

Worth mentioning is the fact that, in view of the specific conditions of each enterprise, some places have done a good or very good job of protecting labor and improving the environment while, on the other hand, some places, due to lax management or a lack of knowledge, have failed to correctly implement technical regulations in production, not complied with the regulations governing labor safety and environmental protection under permissible conditions and even operated in a careless, sloppy manner, thereby affecting the health of workers and partially polluting the environment of the surrounding area.

The chemical industry, which is in the same general situation as the rest of our country's industrial sector, must pay even greater attention to protecting the environment. In all the regulations the state has ever had regarding capital construction, importance has been attached to environmental protection at the very outset, from the selection of construction sites and protuction methods to the establishment of permissible levels of toxic substances and effluence, with the participation of public health agencies and the various levels participating in the approval of designs and testing. The various leadership levels of the chemical sector have always been concerned with environmental protection. The technical management agencies of the sector are increasingly adopting plans for closely guiding compliance with production regulations and adopting environmental protection regulations. The chemical industry's Institute of Project Planning, which has designed chemical projects within the scope of its function and as permitted by specific circumstances, has applied labor safety and environmental protection technology in its design projects, such as installing ventilation to remove dust, treating air and water emissions and enclosing equipment; as a result, increasing advances have been made in this area of design projects. However, there are still many shortcomings in our design work, shortcomings that have had a certain influence upon a number of projects as a result of the following:

--Industrial regulations and methods are incorporated in designs without the necessary data, consequently, due to the actual changes occurring in production, environmental protection equipment is not consistent with actual conditions.

--The permissible residues of effluents are usually very small; industrialists generally only supply to the design agency information on the industrial conditions surrouding the production of main products but usually have no data on effluents or methods of industrial treatment.

--The technology involved in treating effluents is frequently very complex and costly; however, there is no agency specializing in this technology and design agencies still do not have an environmental protection testing laboratory or pilot project plant in order to conduct research and obtain design data, consequently, they are unable to test newly designed equipment.

--The cadres who design chemical equipment still lack experience; the technology involved in the manufacture of equipment and the technology involved in enclosing equipment do not meet strict requirements regarding tightness, pressure and temperature.

--The capital we have to invest in the construction of projects is limited and investments in environmental protection sometimes constitute a very high percentage, consequently, we are unable to fully implement the desires of the design agencies.

--Because specific conditions require that we employ simple industrial methods, we have not been able to establish closed cycles for the purpose of consuming effluents.

--Our scientific-technical information and our contacts with modern industrial environmental protection technology are limited, consequently, difficulties are involved in learning and effectively applying the latest technological achievements.

--The review of the experiences and strongpoints in design work has not been thorough and the specialized design groups, such as those designing ventilation systems, dust removal systems, systems for treating air and water emissions and technologies for enclosing equipment, do not have highly trained cadres and have not been strengthened.

Despite the obstacles mentioned above, because we understand the importance of environmental protection and in order to prepare for the future, the institute has, to the degree possible, cooperated in the successful research of a number of items, such as the following:

--Researching the mass conversion and heat dispersion effects of a number of types of catalysts that create ignition and diffuse high temperature heat over a mesh in the form of a honeycomb to remove the gases CO and NOx and various types of hydrocarbons.

--Researching the removal of phenols by means of activated mud from the To Lich River in Hanoi (a biological method) in order to remove phenols from the waste water of coke refining plants, synthetic paint factories, etc.

At present, the institute is researching the adsorption of paint solvent in the air (which is part of the state level program of the Labor Safety Science and Technology Research Institute, the Vietnam Confederation of Trade Unions).

Recently, the chemical industry Institute of Project Planning accepted the task of establishing an industrial technical research component (industrial processes and chemical equipment) which will include environmental protection technology. This is a very large task. The greatest difficulty at this time is the lack of material bases with which to equip laboratories as well as organize cooperation and environmental protection within the chemical industry regarding certain problems that exist under our country's tropical conditions. We must research the application and development of the scientific achievements of the world in a manner consistent with conditions in our country.

The concept of protecting the environment is increasingly penetrating the thinking of managers and the persons directly engaged in production. In coordination with the increasing improvement of the legal regulations of the state and increasingly close cooperation (both domestic and international), many advances will surely be made in our protection of the environment.

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CSO: 5000/5757

USE OF WATER FROM ICEBERGS CONTEMPLATED

Johannesburg THE STAR in English 22 May 82 p 3

[Article by Rob Soutter]

[Text] Icebergs from Antarctica may have to be tapped to provide South Africa with fresh water in the next century.

"There is no fear of South Africa running short of water," says a Government expert, "but some unusual and expensive sources may have to be exploited to ensure adequate supplies.

"These could include towing icebergs from the Antarctic, cloud seeding and digging canals to link South African rivers with the Okavango Swamps, said Mr Bill Alexander, manager of scientific services with the Department of Water Affairs.

"The number of schemes that can provide water economically is limited. After they have all been commissioned we will have to look to other sources."

Icebergs could be moored 50 km off the coast and quarried for water, said Mr Alexander.

Problems include the deep draught of the iceberg, and the difficulty of melting the frozen water and conveying it to land.

With water resources becoming scarcer they will unavoidably become more expensive, and this will help make many presently uneconomic schemes more attractive.

Recycling will assume an increasingly bigger role in providing water. On the Witwatersrand, between 60 and 75 percent of water delivered to users is returned to sewage purification works.

"South Africa is one of the world leaders in the field of treating sewage effluent to produce clean water.

--Importation of water from states to the north of South Africa. The problems are political and economic not technological.

--Desalination of sea water. The oceans are the only unlimited source of water and techniques for desalination are well known.

--Weather modification. The Department of Water Affairs is researching this process in co-operation with the weather bureau, at Bethlehem in the Orange Free State.

CSO: 5000/5760

DESTRUCTION OF GEORGE/KNYSNA WILDERNESS DEPLORED

Johannesburg THE STAR in English 22 May 82 p 5

[Article by Graham Ferreira: "The Fate of the Wilderness--Bulldozers, Pollution Have Started the Destruction"]

[Text] The George/Knysna/Wilderness area is being threatened by environmental blunders, which, say conservationists, are turning the Garden Route into "the garbage route." Graham Ferreira reports.

A four-lane highway divided by a traffic island will slash through tranquil Wilderness village turning one of South Africa's showpiece seaside retreats into a thoroughfare for convoys of heavy trucks and cars.

The plan to "upgrade" the existing road which winds through the picturesque Kaaimans River gorge and over the peaceful Touws River estuary at Wilderness was struck on as an alternative for the stretch of the coastal freeway between George and Sedgefield and requested by Prime Minister, P W Botha, himself a resident of Wilderness Village.

But the four-lane alternative now before the George Divisional Council was described by residents, scientists, hotel-owners and environmentalists as "the worst possible option."

And the controversial "upgraded road" is just one of a series of environmental blunders which one of the leading conservation figures in the area, Mr Time Balchin, says is turning the Garden route into "the garbage route."

On the other side of the coin are those who believe that all is rosy in the garden and many who believe that "Pee Wee" would not allow things to go wrong.

The stern presence of the Prime Minister hangs heavily over the little towns, villages and hamlets which dot the country and seaside and many of his followers have blind faith that their leader will "see everything comes right."

But the facts indicate otherwise. It will take more than just the pervasive influence of the Prime Minister to put things right along the Garden Route.

'Sensitive'

The area is described by ecologists as extremely sensitive, and is being subjected to devastating environmental degradation. Many long-time residents told me that "Wilderness just isn't like it used to be" and things are not getting any better. Other developments and activities which will result in major environmental degradation to the world-famous coast include:

--An "unnecessary" section of the new freeway which has cut through the Bloukrans Forest dividing the forest in half and destroying more than a million cubic metres of top-grade indigenous wood.

--The controversial Kleinkrantz housing development said to be the most expensive of its kind anywhere in the world. It necessitated the flattening of half a million cubic metres of sand dunes.

--The dredging of the lagoon system at Wilderness which is destroying the adjacent reed beds, a vital nursery area for fish.

--The large-scale theft of ferns in the Knysna Forest by unscrupulous operators working on permits, given without apparent screening by the Department of Nature Conservation. The permits are supposed to be for picking ferns on the permit holder's own land, but at night the operators work illegally in State forests.

--A virtual lack of control over the taking of prawns and other bait species in the Knysna Lagoon, which the Mayor of Knysna, Brigadier Doug Campbell, says, is devastating the prawn banks, vital to the estuary's ecosystem.

--A build-up of pollution from human sewage in the Wilderness lake.

--A serious problem with invasive alien vegetation especially blackwood, black wattle, and acacias which are threatening the indigenous forest.

--So-called "creeping development" whereby a major project which would not be allowed in its entirety is "slid past" local authorities by the developer applying for permission to develop bit by bit, each piece of the development appearing in itself innocuous.

--Development decisions by local authorities who have no concept of the impact of the developments which are proposed.

Unanimous

Almost all of the 20-odd people whom I interviewed during a recent visit to South Africa's "Lake District" were unanimous that there was still enormous potential for the Garden Route. It was still one of the most beautiful scenic areas on the continent but injudicious development, greed, ignorance, political experience were taking a grave toll on the natural beauty of the area.

For the Garden Route the writing is on the wall. Unless the warning signs are heeded, Mr Balchin's prediction will become reality soon.

In the words of a leading environmentalist, the lakes, estuaries and vleis of the Garden Route between George and Knysna are "dying slowing from benign neglect."

In order to keep the Touws river estuary deep enough for all-year-round boating, a dredger has been installed near the mouth, but according to an ichthyologist, the dredging, carried out with little or no thought for the environmental consequences could have disastrous consequences.

Mr Alan Whitfield is studying aspects of the aquatic ecology on nearby Swartvlei, one of the lakes of the Wilderness system.

"If you notice that the sand being pumped to shore during dredging is building up over the reed beds on the flood plain next to the river, it becomes apparent how stupid the dredging is," he said.

"That sand is mainly of marine origin. It's being brought in by the sea, and it's just going to keep on coming. Meanwhile the reed beds are being destroyed and they are vital to the ecology of the estuary.

"The reeds provide the detritus (decomposed vegetable matter) which feeds the little invertebrates on which the juvenile fish feed.

"Contrary to a popular fallacy most fish species don't breed in lagoons, but in the shallow inshore protected areas. At a very early stage of the development the juvenile fish enter the estuaries which provide them with ideal nurseries in which to grow to maturity.

"Nurseries are the most productive of all ecosystems, and are vital to several of our best-known species such as white steenbras, leervis, stumpnose, and grunters."

As an example of what can happen when the ecosystem changes--even naturally--Mr Whitfield explained his current line of research.

A type of watergrass called potamogeton lives in the shallow areas of Swartvlei. The plant provides shelter and food for countless little crustacea and other invertebrates on which the juvenile fish feed.

Recently, because of a dry period, the salinity of the lake rose and the potamogeton died off.

Scientists found an immediate drop of 70 percent in the mass of fish in the surrounding waters.

This illustrates how disastrous the destruction of the riverside reed beds by dredging could be.

Besides killing off the reed beds in the river flood plain, the dredging has destroyed numerous prawn beds in the river and lagoon itself. I watched as hundreds of prawns were spewed out on to the bank along with sand, golf balls, old shoes and other objects dredged from the lagoon.

Another problem facing the lakes is pollution from human sewage. In the Wilderness areas, some developments such as the caravan park lie very low, in fact below the flood level.

This causes problems with sewage disposal, and recently there has been concern about the build-up of dangerous bacteria found in human excreta.

In order to counter this threat the Outeniqua Divisional Council agreed unanimously about 18 months ago to introduce the so-called pasveer system for, among others, the caravan park.

Understandably the residents required to buy this system were worried as it appeared that it was expensive. But subsequent questioning showed that not one of the councillors who had voted for the system had the vaguest idea what the system entailed. When the chairman asked if anyone could explain what the system looked like, or how it operated, councillors admitted they did not know. The idea was scrapped, and the problem with sewage remains unsolved.

To add to the other environmental problems of the lake system the overexploitation of bait organisms such as mud prawns in the area is causing a lot of official head-scratching.

According to the mayor of Knysna, Brigadier Campbell, the mud prawns and bloodworms which are a vital part of the ecosystem of the lagoon are coming under heavy depredation by people taking more than the limit.

On an optimistic note however, he concluded that many people in the area were environmentally aware, and acted as watchdogs. "That does help us to keep control."

Kleinkrants: Who Will Benefit?

The first houses of the controversial Kleinkrantz housing scheme are to be started this week. The scheme, situated next to the national road near Wilderness, has been described by a developer as the most expensive of its kind anywhere in the world. The question environmentalists in the area are asking is who, if anybody, will benefit by the scheme?

In CSIR's report on the Cape coast commissioned by the office of the Prime Minister six years ago, Dr Alan Heydoorn and Dr Ken Tinley said that the Kleinkrantz site was "open to question."

The gross disturbance of a sensitive dune barrier system is a matter for deep concern and the danger of severe sandblows which will threaten the national raod between George and Knysna is very high indeed.

Added to this, the report notes that sociologically the site is in the middle of a prime tourist area. A large part of the scheme is sub-economic and will house working people. The locals point out that at present there is no suitable transport to the only towns with job opportunities in the area, George and Knysna--both many kilometres away from Kleinkrantz.

During a recent visit to the area, I spoke to a source close to the company engaged in the development. A photographer and I were taken on to the site.

The sand dunes have been bulldozed aside, scooped up by enormous sand-moving vehicles, and deposited somewhere else, to level the area.

It is an impressive development requiring sophisticated technology and planning.

According to the source it is the only place in the world where such a huge expanse of sand dunes has been flattened for a housing development.

"The cost is astronomical," he told us.

I was also told that the Department of Community Development, which is footing the bill, broke records to get the scheme under way.

"It was go, go, go, from the time the contract was out to tender until the work began. That must have been some sort of speed record," the source told me.

We watched as two mechanical scoops worked in tandem to dig out a trench more than 8 m deep to lay the sewage pipes.

According to the source the area will be completely grassed and paved preventing sand blowouts.

"There's been a lot of bad publicity about this scheme, but it's going to be a wonderful development. One of the positive aspects is that the developers have agreed to have tiled roofs instead of the original plan for corrugated asbestos. That really makes a big difference aesthetically," said the source.

However successful the developers might be in reducing sand blowout, the site chosen for the controversial scheme remains "open to question."

And the question being asked at Wilderness is: "Who made the decision and who stands to gain?"

CSO: 5000/5760

RIVERS DRY UP AS DROUGHT GRIPS MIDLANDS

Harare THE HERALD in English 28 May 82 p 6

[Text] GWERU.

WATER supplies, grazing land and the condition of cattle are deteriorating in the Midlands, according to reports to the province's drought relief committee on Wednesday.

Extension officers and district administrators painted a grim picture of small rivers drying up and dam levels failing.

In the Zvishavane district "small rivers are drying up and dams are below 50 percent", an Agritex officer told the meeting. "The grazing is still good but that is because arable land has been opened up to grazing.

"Cattle are in a fair to good condition, but will deteriorate as the year progresses."

A district administrator in Shurugwi reported that some dams in his area were down to 25 percent.

Grazing land was one of the main problems facing the Midlands, with some areas having poor or no grass.

The chairman of the committee, Mr Vaughan Evans, said: "We had planned to use resettlement land for grazing but the Ministry of Lands, Resettlement and Rural Development has rejected this."

"In Kwekwe people have opened up their arable land for grazing but in the long run the situation is going to get worse," the district administrator from the area said.

There had been plans to use the Sebakwe National Park and the Katanga bombing range in the Kwekwe district, but permission had been denied by the authorities.

"They denied the use of the national park because there are no dipping facilities and the bombin range because there a still unexploded bom there," he said.

An extension office from Gokwe said wate was going to be the mos crucial issue.

"People are unwilling t sell their cattle in Gokw because the Cold Storag Commission estimates the weight of the cattle — the scale has broken down," he said.

"It is the duty of Agritex to encourage people to sell cattle in the communal lands but district administrators and councillors should also assist in this matter," Mr Evans said.

It was agreed that Agritex extension officers should attend district council meetings to brief councillors on the sale of cattle.

The CSC representative, Mr D. Duff, said: "It is your duty as district administrators to urge people to sell their cattle now. In six months' time it will be too late."

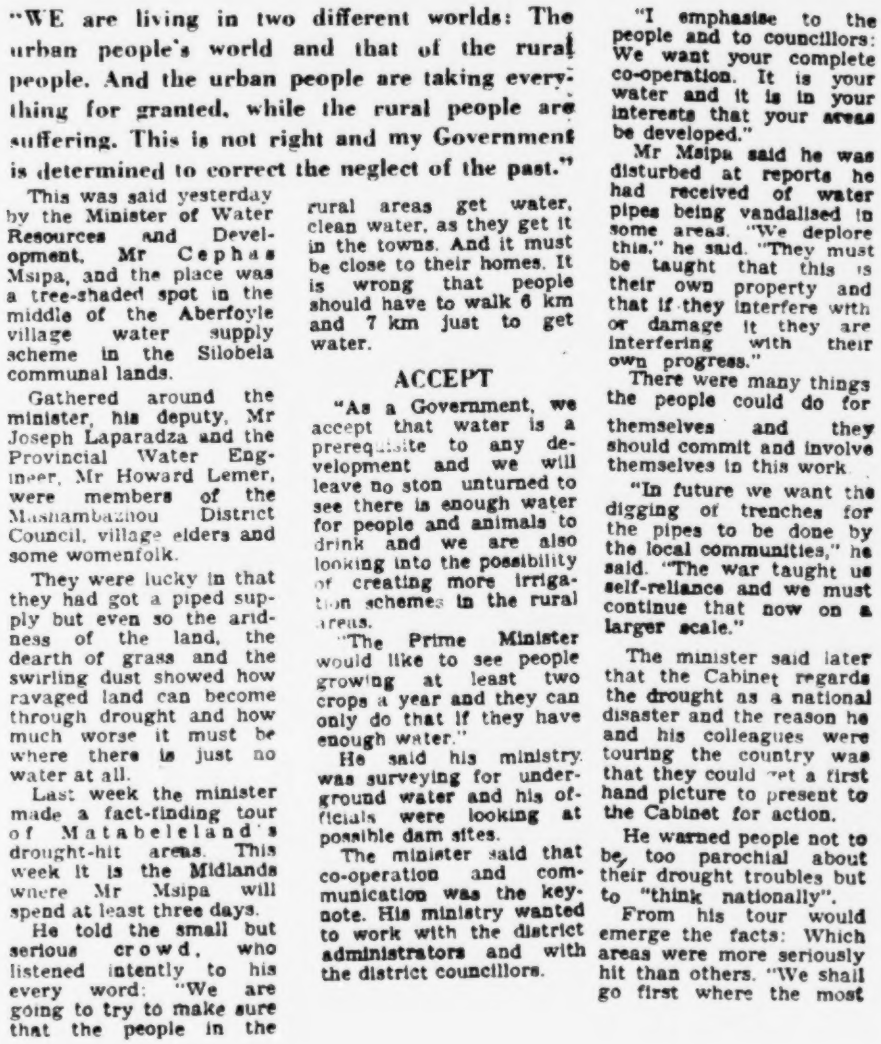
Mr James Hampton of the Ministry of Water Development said that 12 drills had been imported from Malawi and nine were being provided from British aid.

Three were destined for the Midlands but they "will not be able to fulfil the programme we have mapped out for the next six months", he said. — Ziana.

CSO: 5000/5761

WATER RESOURCES MINISTER DISCUSSES DROUGHT, SUPPLY SCHEME

Harare THE HERALD in English 27 May 82 p 4



[Text] **"WE are living in two different worlds: The urban people's world and that of the rural people. And the urban people are taking everything for granted, while the rural people are suffering. This is not right and my Government is determined to correct the neglect of the past."**

This was said yesterday by the Minister of Water Resources and Development, Mr Cephas Msipa, and the place was a tree-shaded spot in the middle of the Aberfoyle village water supply scheme in the Silobela communal lands.

Gathered around the minister, his deputy, Mr Joseph Laparadza and the Provincial Water Engineer, Mr Howard Lemer, were members of the Mashambazhou District Council, village elders and some womenfolk.

They were lucky in that they had got a piped supply but even so the aridness of the land, the dearth of grass and the swirling dust showed how ravaged land can become through drought and how much worse it must be where there is just no water at all.

Last week the minister made a fact-finding tour of Matabeleland's drought-hit areas. This week it is the Midlands where Mr Msipa will spend at least three days.

He told the small but serious crowd, who listened intently to his every word: "We are going to try to make sure that the people in the rural areas get water, clean water, as they get it in the towns. And it must be close to their homes. It is wrong that people should have to walk 6 km and 7 km just to get water.

ACCEPT

"As a Government, we accept that water is a prerequisite to any development and we will leave no stone unturned to see there is enough water for people and animals to drink and we are also looking into the possibility of creating more irrigation schemes in the rural areas.

"The Prime Minister would like to see people growing at least two crops a year and they can only do that if they have enough water."

He said his ministry was surveying for underground water and his officials were looking at possible dam sites.

The minister said that co-operation and communication was the keynote. His ministry wanted to work with the district administrators and with the district councillors.

"I emphasise to the people and to councillors: We want your complete co-operation. It is your water and it is in your interests that your areas be developed."

Mr Msipa said he was disturbed at reports he had received of water pipes being vandalised in some areas. "We deplore this," he said. "They must be taught that this is their own property and that if they interfere with or damage it they are interfering with their own progress."

There were many things the people could do for themselves and they should commit and involve themselves in this work.

"In future we want the digging of trenches for the pipes to be done by the local communities," he said. "The war taught us self-reliance and we must continue that now on a larger scale."

The minister said later that the Cabinet regards the drought as a national disaster and the reason he and his colleagues were touring the country was that they could get a first hand picture to present to the Cabinet for action.

He warned people not to be too parochial about their drought troubles but to "think nationally".

From his tour would emerge the facts: Which areas were more seriously hit than others. "We shall go first where the most suffering is being caused," he said. "The other areas will have to accept that and will have to be patient."

STILTED

The Aberfoyle scheme consists of two large stilted tanks 4 km apart, fed from wells and with a line of pipe between them. At intervals of about 200 m along the pipe there are stand pipes — drinking, washing and cattle points along the line of villages.

Urbanites would turn up their noses, for they've been spoiled. But to the villagers — even though the water tastes a little bitter, even though they sometimes have to queue for it, and even though drawing it is a long business — it is comparative heaven. It's water.

On leaving Aberfoyle, the minister and his party went to Fatima School where some Danish engineers of the People-to-People Organisation were drilling wells. In the afternoon they visited the Segwala and Njini villages water supply schemes in the lower Gweru area.

Today they will visit the Tokwe resettlement scheme and the Mtorohuku irrigation scheme in Chiwundura. Tomorrow they will go to the Palawan dam and from there to the Mabwematema irrigation scheme in the Runde communal lands.

CSO: 5000/5761

FARMERS LAUNCH CATTLE RELIEF PLAN

Harare THE HERALD in English 27 May 82 p 4

[Text] NYANDA.

FARMERS of Nyanda Central commercial area have embarked on a "grazing relief programme" in an effort to preserve the country's national herd in the light of this year's severe drought.

This was said here yesterday by an under-secretary (development) in the Ministry of Local Government and Town Planning, Dr Efison Munjanganja.

In an interview, Dr Munjanganja said that after a meeting with the Nyanda Central commercial farmers, Gutu and Masvingo district councillors, and villagers at the River Popoteke it was agreed to pool resources for the development of the country.

As a result, communal farmers from Gutu and Zimuto areas would be able to graze their cattle on commercial farms without payment. "This kind of working relationship can only go a long way towards further promotion of our country's economic development," he said.

Dr Munjanganja appealed to other commercial farmers to do likewise as this would not only foster better relations but also preserve the country's national herd.

One of the commercial farmers who did not want to be named said that the decision had been taken to provide adjacent communal farmers with grazing as their pastures were "virtually dry".

On how the cattle would be distributed to each farmer, he said this would be done with regard to the carrying capacity of each individual. — Ziana.

CSO: 5000/5761

ZIMBABWE

BRIEFS

RELIEF TO MATABELELAND--Ten seven-tonne trucks will leave here today with 850 bags of maize for delivery to drought-relief distribution points all over Matabeleland. The delivery--the first to cover the province since food-relief deliveries started with Binga and Beitbridge earlier this month--was announced last night by the chairman of the Provincial Drought Relief Committee (PDRC), Mr Jacob Mudenda. Mr Mudenda said the committee met yesterday to speed up delivery of relief to drought-stricken areas of Matabeleland. "We have already delivered 20 tonnes to Binga and 10 tonnes to Beitbridge," said Mr Mudenda. Today's shipment would complete the first cycle of deliveries to the affected areas. The committee's operations managers, Mr B. C. Charlesworth and Mr P. G. W. Ball, would carry out an on-the-spot check on distribution and report to the committee. "The committee hopes to follow this up with deliveries of beans and groundnuts next week," said Mr Mudenda. Today's deliveries go to Inyathi (70 bags), Tsholotsho (140 bags), with 80 bags to Lupane, Nkayi, Hwange, Plumtree, Kezi, Esigodini, Filabusi and Gwanda. Christian Care has given 500 bags and others have been bought by the Government. [Text] [Harare THE HERALD in English 27 May 82 p 1]

DROUGHT NO DANGER--Cattle feed expert Dr Dick Elliott is not worried by the effect of the drought on the national herd. He said yesterday that there was little histroical evidence to suggest that the drought would have a crippling effect on the national herd. Dr Elliott, a cattle feed consultant, was speaking on rebuilding the national herd to farmers at the Agri-foods winter beef symposium at Harare Showgrounds. The effect of the drought had been to redistribute cattle within the country, Dr Elliott said. He felt farmers could probably discount the present drought as unlikely to have much lasting effect on the national herd. Present estimates were that there were five million head of cattle in Zimbabwe. Assuming that a growth rate of 5 percent annually could be attained under favourable conditions, Dr Elliott estimated that it would take at least six years to regain the 1977 peak of 6,5 million head. [Text] [Harare THE HERALD in English 27 May 82 p 8]

EFFECT OF DROUGHT ON HERD--The effect of the drought on the national cattle herd is increasing and the Cold Storage Commission continues to be "hard pressed" to cope with slaughter and feedlot space, according to THE FARMER magazine last week. A report in the publication said that the kill for the first three months of this year was 96 600, as against 86 000 for the same period last year. But bookings for April/May/June have now risen to 117 750 head of cattle, and applications for July to October are 145 000 head. These are almost entirely from the commercial sector. The report said that the response from the communal sales has so far been disappointing, with about 25 000 in the first three months as against 13 000 last year. "It is still anticipated that as mahy as 200 000 will have to be handled by the end of August, which will obviously now provide severe logistical problems." Feedlot bookings have already topped the figure of 30 000 from the commercial sector and these will be accommodated, said the report. It added that the Cattle Finance Scheme for 1982 has now been adequately funded to cope with normal applications as well as the drought-relief purchases. [Text] [Harare THE FINANCIAL GAZETTE in English 21 May 82 p 3]

CSO: 5000/5761

FORESTRY INTERESTS WANT GOVERNMENT TO ALLOW AERIAL SPRAYING

Helsinki HELSINGIN SANOMAT in Finnish 13 May 82 p 11

[Article by Martti Heikkinen: "Forestry Companies Want Aerial Spraying"]

[Text] Kuopio--The forest companies and also some of the private owners of forests want the aerial spraying of forests once again next summer. In spite of delaying tactics in the Ministry of Agriculture and Forestry the companies have acquired permits for the aerial spraying of foliage over thousands of hectares. Also aerial spraying has been requested in private forests at least in Central Finland.

The Association of the Forest Industry has stated that the companies have considered aerial spraying over a total of approximately 5,000 hectares. Applications for permits have not been made for the total area, but in any event aerial spraying will be considered inevitable over extensive wilderness areas.

Last summer no aerial spraying was conducted at all in Finland. The Forest Administration has announced that it has given up aerial spraying in its entirety for next summer also due to the furor it has aroused.

After many delays and differences of opinion a new law concerning the spraying of foliage is finally being considered. The present law leaves the final decision to the Ministry of Agriculture and Forestry, in which it is expected that decisions concerning several local governments will be made in the near future with regard to next summer's aerial spraying.

"We have received the first request for a ban on spraying from Ruokolahti, and also the local government in Ilomantsi is requesting that all aerial in its area of jurisdiction be prohibited. I would think that in the very near future we will know whether underbrush will be sprayed from the air this summer," stated Section Chief Tapio Korpela of the Ministry of Agriculture and Forestry.

Spraying by Tractors Instead of Aerial Spraying

Korpela's work group, which has deliberated the issue of herbicide spraying, completed its report in March. In it the work group leaned toward supporting the continuation of aerial spraying. In the opinion of the work group considerably more benefit than harm will come from aerial spraying for the forest economy.

"We in the ministry have the understanding that the forest companies are striving to limit the chemical spraying of underbrush as much as possible. The work group's report has not yet been sumbitted to the ministry, but first the statements of groups and factions will be appended to it. After that, we expect a decision on the future of spraying," states Korpela.

Forester Matti Oksanen of the Association of the Forest Industry states that the applications submitted by the companies for resuming the aerial spraying of forests are concentrated in the areas of Northern Savo and Northern Karelia as well as in Central Finland and Kainuu. In Oksanen's opinion the spraying of chemical herbicides cannot be given up completely.

The Central Forestry board in Tapio estimates that the private owners of forests would like to have aerial spraying next summer in an area less than 1,000 hectares. This is only a small percentage of the total forest area to be sprayed.

"For example, spraying accomplished by tractors will be conducted over a much larger area, and because of its accuracy it is expanding forcefully. The substances used are the same as in aerial spraying, but a completely incorrect impression of the danger of these chemicals has been given to the public," explains Forester Eero Hyvarinen from Tapio.

A Strict Ban From Ilomantsi

Statements have been collected in Tapio from the district forestry boards with respect to the necessity of chemical spraying. In the opinion of the forest owners the work group was too cautious in its recommendation to continue aerial spraying. The members of the board had serious doubts as to whether local governments could even reasonably deliberate the approval or rejection of aerial spraying after the furor of recent years.

The local government in Ilomantsi hastened to petition a ban for next summer from the Ministry of Agriculture and Forestry. Enso-Gutzeit would have wanted to conduct aerial spraying in the area of Ilomantsi over a full 200 hectares in especially dense and remote forests.

The authorities in Ilomantsi, which received considerable attention from the Hattuvaara incident, stated unanimously that the environment must be protected from poisons and even Enso can eliminate underbrush be safe means -- even at a reasonable cost.

"We have been opposing the aerial spraying of underbrush since 1974, and our position has only become more firm. We are greatly amazed that the forest companies can once again ask for permits for aerial spraying. A new law has still not been enacted, and it is on this very basis that aerial spraying was abandoned last summer," states Ilomantsi Town Supervisor Onni Ikonen.

In Enso-Gutzeit's district office in Joensuu the negative decision in Ilomantsi is considered to be exceptionally unfortunate and also expensive because of its consequences. Forester Ahti Aikas pointed out that remote forest areas will remain as unproductive thickets.

All in all, Enso is requesting permission to spray approximately 400 hectares in Northern Karelia next summer. In the company it is calculated that the two-time spraying of a comparable area of forest mechanically with manual labor would cost at least 300,000 markkas more than aerial spraying. If, on the other hand, these wilderness areas remain overgrown with underbrush, the damage is calculated in millions of markkas.

In the opinion of the work group, which has been deliberating the spraying of herbicides, the interests of the forest economy would require aerial spraying over approximately 32,000 hectares on corporation, private, and state lands. Correspondingly, chemicals should be spread by tractors over an area of 10,000 hectares.

Association of Agricultural Producers Demands Compensation for Spraying Limits

The MTK [Association of Agricultural Producers] is demanding compensation for private forest owners if, for example, limitations on spraying causes additional expenditures for them.

If the chemical spraying of underbrush is limited significantly, the goals and objectives of our forest economy will have to be set at a lower level than at present, notes the MTK in a statement from a report of the Agricultural and Forestry Ministry's underbrush work committee.

In the opinion of the MTK issues connected with the chemical spraying of underbrush have been exaggerated in recent years and public opinion has been led astray. The association considers that present regulations have in practice turned out to be relatively effective.

The ministry's work group was of the opinion that regulations concerning the chemical spraying of underbrush should on the whole be retained as they are. According to the proposal of the work group local governments would be given an opportunity to prohibit or limit the aerial spraying of herbicides in their own areas of jurisdiction. A decision to prohibit or limit would be made subject to the approval of the Ministry of Agriculture and Forestry.

The MTK supports this procedure. It particularly emphasizes the work group's position according to which a local government should obtain a statement from a district forest board in considering a decision to prohibit or limit spraying.

10576
CSO: 5000/2117

CONSERVATIVE MP DISCUSSES MOVE FOR AN ENVIRONMENT MINISTRY

Helsinki SUOMEN KUVALEHTI in Finnish 14 May 82 pp 30-31

[Report on interview with Conservative Member of Parliament Matti Pelttari by Leena Hayrinen: "Finland Ripe for Conservation"; date and place not given]

[Text] In 10 years time Finland has gotten ripe for the formation of an environment ministry. These past few weeks sometimes broad and sometimes narrow compromises have been sought in the Constitution Committee. The Conservative Party is assuming the role of arbiter. Our interviewee is a Conservative Party member of the Constitution Committee, lawyer and Member of Parliament Matti Pelttari of Pori, known for his interest in environmental affairs as early as the debate on the Gravel Law.

"The land does not belong to man, rather man to the land."

In the careful enunciation of the former narrator, Center Party chairman Paavo Vayrynen read Indian chief Seattle's ideas from the parliamentary rostrum. The old Indian's profound, now classic speech on the connection between man and the land is very appropriate to the discussion on the environment ministry soon to be established in Finland.

How well Seattle's ideas agree with the position adopted by the Center Party and particularly the stance the Agricultural Producers Association (MTK) has taken with regard to management of the environment is another matter. We may ask whether the present-day, nearly industrial farmer or lumberman is any longer that brother of the streams, wind and animals who says: "What happens to the land happens to the sons of the land. No man has woven the fabric of life; man is only its fiber. What he does to the fabric he does to himself."

Conservative Party Decides

The proposal for an environment ministry, which after having been discussed in Parliament last week on the basis of a government report, has been passed on to the Constitution Committee.

Ten years of shilly-shallying and backtracking are producing results. At the same time an interesting social situation has been clarified. The Left has lined up behind the broad plan for an environment ministry. The Center Party is promoting an alternative whereby, for example, environmental protection and construction and planning functions would remain outside the province of the ministry. The MTK, in whose opinion the country does not yet need any kind of environmental management, has publicly adopted an even tougher stance than that.

The MTK has officially announced that it is opposed to increasing the bureaucracy. Behind its uncompromising positions, however, may be the fear that interest in the environment might affect [land]owners' interests in a damaging way, for example, planning and construction activities.

The magnifying glass of an environment ministry could also in an annoying way shoot down the myth that farming in particular is the livelihood that conforms best to nature and that all pollution stems from industry. It has already been recognized, for example, that there are actual cases in the Aura River watershed in which farming plays the role of polluter. Poisons used in food-production farming have so far been seldom discussed and have, for example, remained under the cover of underbrush poisons. But what would happen if there were an energetic environment ministry in this country?

The Conservative Party is playing the role of arbiter in this situation. From the pinnacle of the temple can be seen speculating housing construction contractors, homeless liberals kindled with the flame of gentle values, ministerial posts and the indisputable values of the Finnish way of life that are so close to nature; yes, from it can be seen almost anything from factory owners to conservationists.

Now does the Conservative Party's sense of responsibility carry any weight in this situation in terms of environmental issues?

"Not only the Conservative Party's, but every member of Parliament's. Environmental affairs have become so all-pervasive that they affect just about everything," Conservative Party member of the Constitution Committee and Member of Parliament Matti Pelttari replied.

Fighting over Planning

Matti Pelttari is recognized as a member of Parliament who is interested in environmental issues and who, in connection with the handling of the Gravel Law, earned himself the reputation of being "a progressive Conservative" even among opponents.

The Conservative Party is usually divided on environmental issues and recently — for example, in the handling of the Soil Element Law — even in part overtook the center from the Left. According to Pelttari, this is part of "the role of the second largest general party": "Supporters and representatives too come from so many different places and the discussions engaged in are so multifaceted. However, with a sense of responsibility we strive to achieve a common view of things. Of course, the Social Democrats discuss these matters among themselves too, but they are used to coming up with only one view.

"The fact that the time for creating an environment ministry is now everywhere regarded as being ripe is a very positive factor. The environment is so important that there should be a minister for that domain in the Council of State."

In limiting the field of activity of the future environment ministry, perhaps a bigger controversial issue is involved in working out the incorporation of the construction and planning fields, which the Left feels to be a basic issue. According to Pelttari, the Conservative Party is "at this point hardly" prepared for this:

"The incorporation of construction and planning would vastly enlarge the new ministry. Doubts have arisen that everything else would be buried under it....

"To be sure, in at least two Conservative speeches the opinion was expressed that planning should be included. In my opinion, the ministry should first of all be created now and in a couple of years we could again prepare a report for Parliament and see how the ministry has performed and how it should be improved."

Could planning then be incorporated?

"At that time we could see whether the conditions for it exist."

However, is not planning an absolutely basic issue from the standpoint of the environment?

"The creation of an environment ministry does not mean that environmental viewpoints can be forgotten in all other activities," Pelttari replied. "But if we now lump together everything that affects the environment, we will soon need nothing else but an environment ministry. Everything else would constitute departments subsidiary to it."

Pelttari specified, however, that planning at the local level would sooner or later probably fall within the province of the environment ministry, whereas the planning of stations and construction might remain under communal control, this despite the fact that planning experts regard plans at different levels as an integrated whole within which everything affects everything else. According to Pelttari, in drawing up plans environmental viewpoints are even now scrupulously taken into consideration.

Good and Bad Conservation

Another difficult question is conservation, which the Center Party would like to keep under the control of the Ministry of Agriculture and Forestry. The Conservative Party has not yet taken a firm stand on this.

"Just looking at the issue without thinking, it would seem natural for conservation too to be included in the province of the environment ministry," Matti Pelttari said. "But once the Constitution Committee has listened to all of the 50 experts, I'll be able to give you a better answer."

Conservationists claim that, when production and conservation conflict with one another, the interests of production always win out. Is this true?

"Unfortunately, often so. But no one comes to the aid of a business or even a farmer it it or he suffers an economic loss because of a sensible decision in terms of conservation.

"On the other hand, attitudes have greatly changed. About 10 years ago, the management of Kemiran Vuorikemia notified the municipal government of Pori, with a straight face maintaining that seawater is actually improved through the dumping of sulphuric acid into it. Nowadays no responsible industrial leader would make such a claim. Nor would that plant have been built at Yyteri near Pori with today's knowledge of the situation."

In discussing the environment ministry, the notion has been raised that conservation has been handled well in Finland. Do you agree with this?

"Thinking in international terms, it has been handled well. But if we think in terms of our starting point, it has been handled badly. Of course, this is to a certain extent hindsight. When the wood conversion industry was built up along waterways and at river mouths, they had no idea that in the decades to come it would pollute the water.

"We are certainly still in a fortunate position: Our air is clean and we have an abundance of greenery and a natural environment to live in. We are outright envied because of all this. But do we know how to use this good fortune of ours? Some cold-blooded technocrat may feel that there is still enough of it to squander, but that is not true. There is a chance for us to be selfish enough to not deliberately squander our natural environment."

Emotionally Based Attitudes

When he took the floor in Parliament, Member of Parliament Matti Pelttari wondered at the MTK's lack of feeling for social responsibility.

"In my opinion, it is really fitting to wonder at this. In this matter the MTK represents a typical narrow-minded special interest group mentality. It feels that the organization's mission is to promote only the interests of its members without any regard whatsoever for its effect on the society as a whole.

"It is irresponsible of them to fear that so and so many people will be working in this ministry with the sole mission of making life difficult for farmers. This one-eyed, emotionally based attitude reminds us of the way this businessmen's organization reacted to the job security issue: It did not at all want to regard it in any other way than in terms of the interests of its own members.

"Actually, it is more a question of simplifying the present jungle of licenses than of adding to the bureaucracy. There would otherwise be no point of conflict between the society and the farmers."

As Pelttari sees it, the poison issue is not behind the MTK reactions at all, although the matter is a serious one:

"Nowadays, in every bite of food we eat there are substances foreign to nature, whose long-term effects on our children and grandchildren are unknown to us. We just have to keep our hopes up...."

Can a responsible politician act dependent on hope?

"What other way is there? Otherwise, all food would have to be banned. We are learning more about these things all the time. Apparently, for example, the increase in the number of allergies is the result of the use of added ingredients. There is no other way but to reliably determine the effect of these substances."

Couldn't an environment ministry play a central role in this endeavor?

"One way would be to concentrate research activities and power resources in the new ministry. Just bringing together the at present scattered research resources speaks for the organizing of an environment ministry.

Nature Belongs to City Dwellers Too

"There is a big mistake in our thinking if we base it on the assumption that only environmental affairs pertaining to the cities belong to city dwellers" Matti Pelttari said.

"Finland's natural environment certainly belongs to all Finns."

Should society reward someone for agreeing not to harm the environment?

"The idea seems strange.... In connection with the Gravel Law, this was discussed. But expressed in this way, the idea seems impossible.

"Our next law will certainly be the same kind of environment limiting law there already is in many other countries and in it we will define the concept of crime against the environment."

In Pelttari's opinion, the environment issue can be likened to the peace issue. Both are gentle issues that offer hope for the future and which Finns too can now devote themselves to, since they have an opportunity to also ponder the quality of life instead of just work and making a living.

Of his own "progressiveness," he commented:

"I feel that in any matter one should be ready to consider whether something can be done better, whether some solution advances the cause of people.

"And then when you want to do something in another way, you may also hurt someone's feelings. But that is why we receive a salary from the taxpayers, so that we are ready to assume our responsibility."

And what if — say, in environmental issues — the sting is directed against some traditional Conservative supporter, say, a member of the so-called proprietary group?

"It is a matter of mutual compatibility... is one person's interest to be placed before that of many...."

Is it?

"It depends on the case in question. It is a matter of joint social responsibility."

Who Will Be the First Environment Minister?

According to the Constitution Committee timetable, 50 experts have been heard and deliberations will be over by the second week of June. By Saint John's Eve [summer solstice festival] Parliament will probably receive the justified statement to take up the agenda for discussion. Thus in August, within the framework of thrashing out the budget, the government will have the requirements for appropriating budget funds for the establishment of the environment ministry and by 1983 the environment ministry will be in operation in the country.

And are there any eager and gifted ministerial candidates who are familiar with the field in sight?

"It would be appropriate to ask that question after the March elections," Pelttari laughed.

11,466
CSO: 5000/2120

BRIEFS

ANTIPOLLUTION GAS SWITCH--The government has reached the final decision to close down the coal gas factory on Piracus Street, and replace it with two natural gas units to be built in Aspropyrgos, Industry and Energy Minister Anastasios Peponis said in a press conference yesterday. Peponis said the coal gas factory, which is blamed for its polluting effects, will stop operation by the end of 1983. The construction of the two natural gas factories will begin in September. The two units are expected to be ready for operation before the end of 1983. The Minister said the solution chosen not only contributes to reduction of pollution, but also lays the groundwork for the introduction of natural gas in Greek industry. When natural gas replaces coal gas, he said, industries, not fuelled by coal gas will have the option of either switching to natural gas, or relocating outside the Athens area. Athens Mayor Demetris Beis said a natural gas distribution network be gradually created. The Plaka neighborhood, on the foot of the Acropolis, would have priority in this regard the Mayor said. Atmospheric pollution from apartment building heating units using heavy oil has become a serious threat to the Acropolis monuments, and the previous government had already issued special ordinances banning the use of low-grade oil, with a high sulphur content, in apartment buildings near the Acropolis. [Text] [Athens ATHENS NEWS in English 4 Jun 82 p 4]

CSO: 5000/5331

STUDY SHOWS 1970 BAN ON DDT EFFECTIVE IN SAVING BIRD LIFE

Stockholm SVENSKA DAGBLADET in Swedish 12 May 82 p 14

[Article by Lennart Lundegardh]

[Text] The 1970 ban on DDT saved several species of birds of prey that were becoming endangered. DDT is poisonous, but perhaps the most serious effect is that the shells of bird eggs become thin and, in the worst case, they may be crushed during brooding.

Curator Tjelvar Odsjo of the National Gallery has studied DDT levels in fish hawk and marsh harrier eggs in relation to the success in breeding and the increasing numbers of these birds.

On Friday he will defend his dissertation on this subject.

He gathered his material at several locations in southern and central Sweden. Each year for several years he visited about 140 fish hawk nests of which about 100 were active, i.e. a breeding pair of fish hawks was present.

By comparing the number of fledged young in the nests with information extrapolated from journals from 1938 to 1946, Odsjo discovered that Sweden's fish hawk population declined gradually in the early 1970's.

Protection for Birds of Prey

It was not as strongly pronounced as in the United States during the 1950's and 1960's, nor did it continue during the 1970's.

"An actual decrease in the number of young birds leaving their nests may have been compensated by legal protection for a number of species in Europe beginning in the 1970's," Tjelvar Odsjo said. Previously, it was frighteningly common for fish hawks to be shot during their first flight south.

Measurements of unhatched fish hawk eggs and shell remains in and around nests revealed a decrease in shell thickness by an average of 11 and 15 percent, respectively, compared to museum material from before 1946.

"This seems to be a critical limit," Tjelvar Odsjo said.

"Investigations show that the situation probably was worst between 1965 and 1975. New measurements which we made in 1978 indicate an average increase in shell thickness of 7 percent. We hope to take new samples next year," he added.

It is estimated that there are about 2,000 fish hawk pairs and about 500 marsh harrier pairs in Sweden. The marsh harrier, which also lives along rivers and streams, but finds its food on land, is also producing eggs with thinner shells, to an even greater extent than the fish hawk.

"The decrease averaged 14 percent in the material from the early 1970's," Tjelvar Odsjo said.

But while fish hawk populations remained the same during the difficult years in which the poison was used, the marsh harrier population has increased in three consecutive nationwide counts from 150 to 175 pairs in 1958, to about 200 pairs in 1969, up to the latest figure of about 500 in 1979.

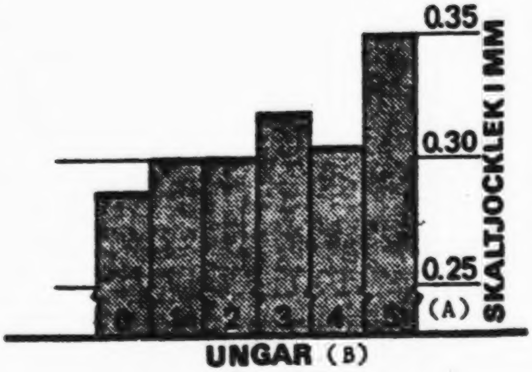
On paper the figures do not seem to add up, but it appears that the marsh harrier, despite doses of DDT, has experienced various factors that have permitted it to increase.

"The increase during the first 10-year period was not especially great," Tjelvar Odsjo said. The entire increase occurred in regions where the marsh harrier already was relatively numerous.

The ban on DDT has had and is having a positive effect, but the substance has not disappeared yet. There is also concern that its replacements may be just as dangerous or worse.

Researchers have begun to find a substance called toxaphene in biological systems. It is not used in Sweden, but it is used elsewhere throughout the world--and in considerably greater quantities than DDT ever was used. Both may be spread throughout the world.

Researchers at the National Gallery and others must keep an eye on these substances.



Key to chart:

A Shell thickness, mm

B Young

A marsh harrier egg crushed by brooding from Kvismaren in Narke--the shell thickness is 0.27 mm. Before DDT the average thickness (according to museum collections) was 0.35 mm. After the ban on DDT, the shells began to become thicker again. The figure shows how breeding results (number of fledged young) among marsh harriers become worse as the shell thickness decreases.

9336
CSO: 5000/2121

FISH FARMING SEEN HARMING WATERS WITH PHOSPHOROUS WASTE

Stockholm DAGENS NYHETER in Swedish 22 May 82 p 15

[Article by Eric Dyring]

[Text] A new conflict of interest has arisen between ambitions to develop Swedish industry and to protect the environment. The Environmental Protection Board's strict regulations for obtaining permission to practice fish farming in net cages is threatening Swedish efforts in this field.

Last week it became clear that the water farming steering committee and the Environmental Protection Board were on a collision course. At that time the committee presented the first reports from the Water Farming Project in Sweden.

The committee, which includes representatives of the Natural Resource Commission of the Coordinating Board of the Swedish Research Councils and representatives of the Ocean Resources Commission, wants Sweden to invest in the systematic and rational cultivation of fish, shellfish, and algae in lakes, streams, and along the coast. They want Sweden to participate in the rapid development that is occurring abroad. Compared to the land utilization in forestry and agriculture, water farming is merely in its infancy when it comes to utilizing all the possibilities of the water. It could be highly productive if properly cultivated.

The Environmental Protection Board has nothing against water farming. It is considered a positive step, but the board is the primary authority for protecting our environment. For this reason, it cannot ignore the negative aspects, according to the board.

Obstacles from Board

The board has examined the environmental effects of fish farming with great care and established strict rules for granting permits.

Fish farming is not permitted to disturb landowners or recreational areas, but it is the biochemical effects that are at the heart of the conflict.

The steering committee for water farming, like the Environmental Protection

Board, believes that the environmental questions are extremely important and has published a special report on this subject, but it also believes that the board has been unnecessarily severe in its evaluations.

"The board's recommendations are an obstacle to the development of water farming in Sweden," chairman of the steering committee Prof Hans Ackefors told DAGENS NYHETER.

He also believes that the Environmental Protection Board has locked itself into its present position by publishing a report on fish farming together with the Board of Fisheries 3 months before the steering committee's report.

Phosphorus Formed

The debate is over fish farming in cages. They are special enclosures in the water where fish are raised in dense schools.

The fish are given food. Most is eaten by the fish, but some sinks to the bottom. The excrement of the fish also ends up there and a sediment is formed. It contains nutrient salts, especially phosphorus. The fish also give off phosphorus through their interaction with the water.

Phosphorus is a ferilizer. Too much phosphorus initiates intense biological activity. Lakes and streams can become overgrown causing an oxygen deficiency. This is the same process that occurs when we release waste into the water through sewers and from industry.

Both sides agree on this. There is disagreement, however, over how serious the effects can be.

The Environmental Protection Board bases its position on theoretical calculations made by director Lars Karlgren just over 1 year ago. Karlgren is a water chemist and not a biologist.

Much or Little?

A key question is how much of the phosphorus in the sediment goes into the water. Karlgren maintains that sooner or later almost all of it ends up in the water, while others believe that a large portion can be kept in the sediment on the bottom.

The steering committee maintains that phosphorus from fish farming must be compared to other phosphorus emissions throughout the country.

"The additional phosphorus from fish farming is extremely little," Hans Ackefors said.

"Even small quantities of phosphorus in the water can have serious effects," Lars Karlgren said.

By way of comparison, the steering committee pointed out that the municipalities of Landskrona and Hoganas release 160,000 kg each year into Oresund from industry, agriculture, and sewers. An extremely large fish farm would release only 1/100 of this amount. One ton of fish production causes 10 kg phosphorus to be released in 1 year, which corresponds to the waste from about 15 persons during the same period.

Locked Positions

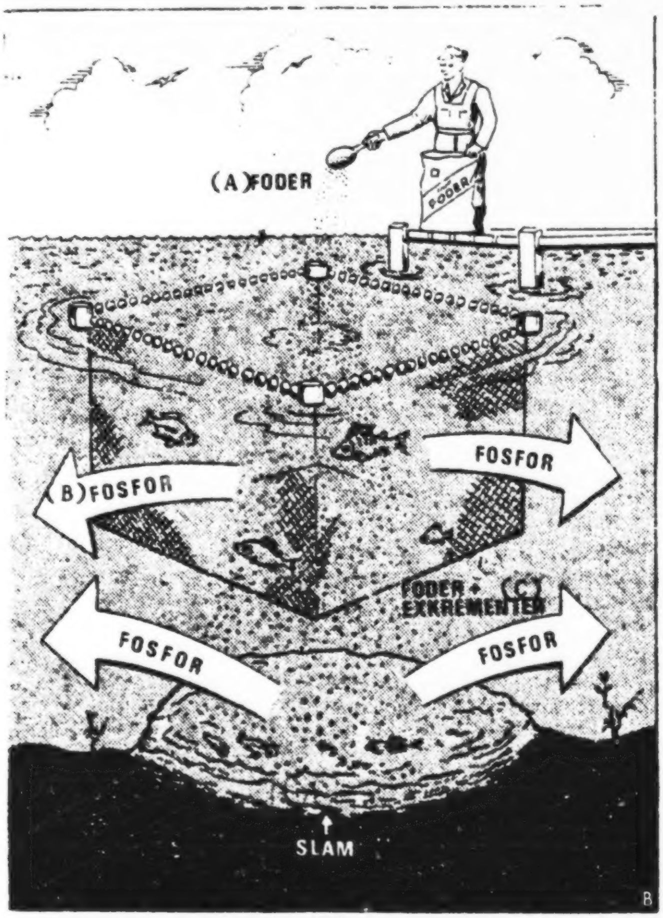
It is possible to reduce the effect. New low-phosphorus foods are appearing on the market and the sediment from the fish farm can be utilized as fertilizer.

"These are steps in the right direction," Lars Karlgren said, "but it will be a while before they can be used in practice."

"The steering committee wants to conduct practical experiments," Hans Ackefors said, "so that we may see if the theories are correct."

"But unfortunately it looks like the Environmental Protection Board is locked into its position," he continued. "Now political decisions are needed."

The effects of the Environmental Protection Board's risk evaluation on the environmental effects of fish farming may already be seen. Most provincial governments, which are responsible for granting permits, apply these regulations in their work. Several provincial governments have even gone much further in their decisions. This means that it is almost impossible for a prospective fish farmer to receive a permit for cultivating fish in enclosures.


(A) FODER
FODER
(B) FOSFOR
FOSFOR
FODER + EXKREMENTER (C)
FOSFOR
FOSFOR
SLAM
B

(D)

Key to figure:

A Food

B Phosphorus

C Food + excrement

D Sediment

In fish farming with cages a small area of water is enclosed where fish are cultivated in dense schools. Some of the fish food is wasted and sinks to the bottom. Excrement from the fish also collects there. The sediment formed contains nutrient salts, especially phosphorus, which are dissolved in the water. The phosphorus fertilizes the water and can initiate intense biological growth in the water causing an oxygen shortage.

9336
CSO: 5000/2121

PARLIAMENT VOTES DOWN PROPOSALS TO LIMIT SULFUR EMISSIONS

Stockholm DAGENS NYHETER in Swedish 21 May 82 p 7

[Article: "No to Tougher Measures against Sulfur Emissions"]

[Text] Parliament has voted down guidelines from Agriculture Minister Anders Dahlgren (Center Party) for tougher regulations against sulfur emissions from coal- and oil-fired plants.

The Conservative Party considered the proposed regulations much too strict and abstained in the final vote. This resulted in a victory for the Social Democrats' proposal to postpone a final decision.

The Social Democrats want to wait until the report on coal, health, and the environment is complete. Until then, the strict environmental protection requirements recommended by the National Franchise Board for Environmental Protection should apply.

According to the Social Democrats, the government's guidelines should be considered minimum requirements in the final decision.

It is not up to parliament to make a formal decision on sulfur emissions standards. Nevertheless, Agriculture Minister Dahlgren reported his and the government's views in the proposal and sought a parliamentary majority. Now it will be up to the government to decide in concrete cases which standards should apply for various types of facilities. No cabinet minister can ignore the decisions of parliament, however, even though the government formally has the right to decide.

Decisive

In the decisive vote the Social Democrats received 153 votes against 87 for the Center Party and the Liberal Party. The 67 conservatives abstained and the VPK (Left Party Communists) supported the Social Democrats.

Parliament did support the government's proposal allocating 190 million kronor over a 3-year period for liming land and lakes. The Social Democrats and VPK wanted to invest even more in this project.

State support also will be extended for desulfurizing facilities during the 1980's. Such investment support should be funded through an increase in the special emergency surcharge on petroleum products by 10 kronor per cubic meter beginning on 1 July 1983.

"I am extremely thankful that you Social Democrats are as interested in this as is the government, but why did you not vote for our proposal?" Agriculture Minister Dahlgren asked during the debate.

He could not understand why they had to wait on the coal, health, and environment report.

Svante Lundkvist (Social Democrat) said that Dahlgren had taken a position between the strict requirements of the Environmental Protection Board and the preliminary recommendations of the study. But the study is not yet complete and, most important, has not been circulated for comment.

The two also disagreed on how other countries view the debate in parliament. Lundkvist claimed that representatives of other countries could see that a large majority in parliament had taken a position in favor or strict regulations.

Dahlgren, on the other hand, said they may believe that Sweden is hesitant to apply strict regulations.

"The Social Democrats are having second thoughts on their support of environmental protection."

9336
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END

JPRS 81329

21 July 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 361

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 361

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SUB-SAHARAN AFRICA

SOUTH AFRICA

Natal To Get Land for Nature Conservation
(Keith Abendroth, Jaap Theron; THE CITIZEN, 26 Jun 82).. 42

GOVERNMENT STUDY FAVORS GREATER PUBLIC SAY IN CONSERVATION

Melbourne THE AGE in English 31 May 82 p 4

[Article by Rosslyn Beeby]

[Text] A Federal Government discussion paper on conservation has recommended more public participation in decisions affecting natural resources and the environment.

The discussion paper, prepared by a Department of Home Affairs and Environment task force, outlines recommendations for the management of Australia's natural environment.

Entitled 'Towards a National Conservation Strategy', the paper is the result of a national seminar in Canberra last year. The seminar was attended by more than 200 representatives from industry, Government and environmental groups.

Recommendations include:

- An intensive soil conservation programme, including research and development of minimum tillage farming systems and tax incentives for land users to retain or plant trees as part of a national tree programme.
- A national strategy for conserving rain forests. The paper claims further loss of Australia's diminishing areas of rainforests will cause a loss of important native plant and animal life.
- A public review at national level of policies relating to the supply of forest products, including re-evaluation of the economy of woodchip export.
- The development of a national fertiliser policy with particular emphasis on phosphorus. The paper claims there is a need for farmers to be more selective in application of phosphorus and recommends research into the recovery of phosphorus from urban sewage.
- Promotion of alternative regional tourism and recreational facilities to ease pressure on fragile conservation areas.
- Improved controls on discharge of sewage and land-based effluents into rivers and the sea.

The paper also recommends that a more efficient use of resources could be achieved by educating people to limit their material demands.

It calls for more participation in environmental management and resources development by farmers, foresters, environmental groups, local government and the mining, manufactring and tourist industries.

Public comment on the discussion paper will be invited until 15 September, when the Department of Home Affairs and Environment will begin preparing a draft strategy for a national conference in February next year.

CSO: 5000/7551

FRANKLIN RIVER DAM REMAINS BURNING POLITICAL ISSUE

Appeal to Federal Gov't

Canberra THE AUSTRALIAN in English 18 May 82 p 3

[Article by Gregg Borschmann]

[Text] LAKE Pedder, Fraser Island and now the Franklin River seem destined to be regarded as symbols of the emerging activism of the Australian conservation movement.

When in 1972 the imminent flooding of Lake Pedder in Tasmania's south-west wilderness spawned direct political action, it was the first traumatic round of a new national and serious game, conservation politics.

A decade later and after Fraser Island, the Franklin River has again landed conservation in the political limelight.

Tasmanian politics dealt the conservationists a harsh lesson in 1972 and Pedder drowned a silent, ignoble and apparently unnecessary death.

The most recent lesson has been no less tough, but the Franklin issue still appears unresolved and potentially destructive politically.

It may be tempting to conclude conservation is still far from a big vote-winner.

Yet according to Australian Conservation Foundation research, last December more than 1000 Australian conservation bodies had membership of between 350,000 and 400,000 — more than the combined membership of all political parties. The Tasmanian Wilderness Society also claims a membership greater than any Tasmanian political party.

The president of the ACF, Mr Murray Wilcox QC, touched upon the "political problem" for conservationists in a speech to a seminar held at Gympie, in Queensland, last weekend.

"There is a problem of political timidity. Politicians say 'we can't get ahead of public opinion'. What they are forgetting is that they are often a mile behind public opinion," he said.

Mr Wilcox said a public opinion poll last December showing 69 per cent of NSW people were opposed to further rainforest logging had influenced the NSW Government.

"Several weeks ago the Premier of NSW, Mr Wran, said rainforest logging was neither environmentally nor politically acceptable. He was not making noises like that before that poll. I think we are on the brink of a major victory in the rainforest campaign in NSW," Mr Wilcox said.

Ten years ago, just as happened this year, the Liberal and Labor parties in Tasmania approached an impending election committed to the Tasmanian Hydro-Electric Commission's power expansion program.

That political brick wall led to the formation of a new political party, the United Tasmania Group, four weeks before the April election.

The group, a loose coalition of various conservation interests with some involvement from the Australian Union of Students, was seen as a single-issue party.

But the director of the University of Tasmania's centre for environmental studies and later president of the new party, Dr Richard Jones, told *The Australian* the group went beyond Lake Pedder: "It was a total protest over disenfranchisement in the Parliament . . . and the way democracy was being handled in this State."

ABUSE OF POWER

The director of the Total Environment Centre in Sydney, Mr Milo Dunphy, co-directed the 1972 United Tasmania Group campaign with Dr Jones. He told a public symposium of the day: "Political leaders and their departmental heads are mostly older men who developed in an era of unquestioned exploitation, too busy to question their own pre-conceptions, too dogmatic to listen to the questions of others."

The House of Assembly in Tasmania returns seven MPs from five electorates for four-year terms under the Hare-Clark proportional voting system. A candidate must poll 1/8th or 12.5 per cent of the formal vote to be elected (official Liberal policy of reducing electorates to five members would make this 20 per cent, a much harder vote for independents or Australian Democrats to attain).

The United Tasmania Group stood 12 candidates in four electorates, but managed only 3.9 per cent of first preference votes. The party did, however, go close to winning a seat in Franklin, where three candidates shared 8 per cent of the first preference vote.

The United Tasmania Group continued as a small-time political party, broadened its policy base but ran out of puff, money and up-front personality in the late 1970s.

By comparison, the independents and Australian Democrats have performed measurably better this year — with 85 per cent of the vote counted, the Democrats already had 5 per cent of the first preference vote, and independents 7.2 per cent.

The issues which motivated the two most prominent independent and Democrat candidates, Dr Bob Brown, from the Tasmanian Wilderness Society, and Australian Democrat Dr Norm Sanders, were identical to those which motivated the United Tasmania Group 10 years ago.

Dr Sanders stood aside from directorship of the Wilderness Society in 1980 because he was opposed to the Lower Gordon Dam, and he was angry about the loggers, the woodchippers and cheap power going to heavy industry.

But he admits he would not have been elected without four years' media exposure as a current affairs reporter on Tasmanian television.

Dr Brown was concerned primarily with the Franklin River, but also the wider problem of use and abuse of power.

Despite his apparently unsuccessful political foray, Dr Brown remains convinced the economics of the proposed dam will eventually create an intolerable political situation, thus saving the river.

The ACF's call earlier this week for a national referendum is obviously part of a new national campaign.

Obviously, the conservation movement has decided the Franklin River is right for the fight. Perhaps it may survive as a living memorial to the dead Lake Pedder.

Politics of Conservation

Canberra THE AUSTRALIAN in English 20 May 82 p 7

[Article by Peter Dwyer]

[Text] CONSERVATIONISTS, disillusioned after the poor showing of most of their candidates in Tasmania's election on Saturday, are preparing to take their fight for the Franklin River to Canberra.

They have conceded that a Tasmanian Liberal Government would successfully legislate for the Gordon below Franklin dam but believe funding for the scheme could be blocked in Canberra.

Yesterday, even the pro-dam movement in Tasmania said it seemed certain the conservation movement would take "its battle" to other States.

One of its leaders, Dr Rob Underwood, said: "Unfortunately, it seems that they (conservationists) will choose the same old confrontationist line."

The conservationists' leader, Dr Bob Brown, claimed yesterday the no-dams lobby had not been decimated in the election. He foreshadowed the national campaign and said the dam would never be built.

However, prominent no-dams candidates including the former Government Whip, Mrs Willey, and the Labor Minister for Police, Mr Graham, appear to have unsuccessfully sought seats in the new Parliament.

But while the successful Liberal Party claims its election is a mandate for the dam, no-dam lobbyists are convinced financial restrictions will ensure the scheme will never go ahead.

Yesterday, the Leader of the Australian Democrats, Senator Chipp, an opponent of the dam, challenged the Tasmanian Liberal Leader, Mr Gray, to prove he had an assurance from the Prime Minister, Mr Fraser, that the Loans Council would not block funding for the dam.

On Sunday, Mr Gray said Mr Fraser had told him that infra-structure finance due to the State would be available to build the dam.

Senator Chipp said: "I challenge Mr Gray to provide documentary evidence to show that he has received this firm assurance.

"His claim runs contrary to advice I have received in a letter from the Prime Minster."

Senator Chipp said that on February 2 this year the Prime Minister indicated in a letter that the Commonwealth had given no commitment to support the dam should the Tasmanian Government proceed with it.

CSO: 5000/7549

LAND CALLED 'DEGRADED' AS MAN DESTROYS FLORA, FAUNA

Canberra THE WEEKEND AUSTRALIAN in English 22-23 May 82 p 2

[Text] THE native animals and vegetation of vast tracts of Australia's arid lands face a bleak future unless sound ecological management is applied soon, leading environmentalists warned yesterday.

The introduction of feral animals and the advent of humans, which have already caused the extinction of many native mammals, has meant that of the 69 per cent of the Australian continent classified as arid lands, 35 per cent has been "degraded".

The Focus on Australia's Arid Lands conference in Broken Hill was told by Dr Martin Denny, of Mount King Ecological Surveys of Sydney, that the impact of humans since the arrival of the Aborigines was exemplified by a study of mammal species at Lake Menindee, south of Broken Hill.

"The number of mammal species in that area 20,000 years ago was about 40, during the 19th century this had fallen to 27 species, and by 1974 only nine native animal species were known from the area," Dr Denny said.

He blamed the high extinction rate on European settlers, and — in the 20,000 years before the arrival of Europeans — climate changes and the use of fire and efficient hunting techniques by Aborigines.

DANGER

"Considering the history of exploitation by humans of the Australian arid lands, the future looks bleak," Dr Denny said.

There was hope in the continued acquisition of land for national parks although much of the land acquired was not chosen for its usefulness in representing various habitats but because it had economic value, he said.

The danger posed and damage already wrought by feral animals could not be underestimated, he warned. For example, 31 species of animals had been introduced by man to Queensland alone.

"Amongst the introduced birds, the sparrow has displaced many small native birds," Dr Denny said.

"Large mammals such as camels, brumbies and donkeys destroy natural vegetation and hence habitat for many native animals, and the rabbit is believed to be the cause of the fall in status of many burrowing mammals through competition for nesting sites.

"Cats are capable of killing large numbers of native animals. On Macquarie Island it has been estimated that 375 feral cats take 58,000 Antarctic birds as well as 56,000 rabbits annually."

Dr Denny said other feral animals, such as the goat, were linked to the loss of the yellow-footed rock wallaby from NSW.

CSO: 5000/7549

MORETON SAND MINING DEBATE FOCUSES ON ENVIRONMENTAL LAW

Brisbane THE COURIER-MAIL in English 24 May 82 p 3

[Text] **THE Federal Government may be forced legally to use legislative powers which would effectively prevent sand mining on Moreton Island, according to the Australian Conservation Foundation president, Mr Murray Wilcox.**

Mr Wilcox, QC, told an environmental seminar in Brisbane on Saturday that Moreton Island may be saved in a similar way to Fraser Island.

His comments came after the Environment, Valuation, and Administrative Services Minister, Mr Hewitt, told a public meeting organised by the Moreton Island Protection Committee, there was "little prospect" the State Government would change its policy on mining.

Mr Hewitt said later: "I anticipate seeing mining activity in the next 12 months on the island."

He had just been presented with a letter from the committee, claiming to represent more than 30, 000 people, which is being circulated to all state members of Parliament urging a reconsideration of mining approval for about 16 km of ocean beach (6.4 percent of the island).

At the seminar, Mr Wilcox, after delivering a speech on new environmental legislation in New South Wales, was asked about the applicability of the Australian Heritage Commission Act to Moreton Island.

Warning his audience he was speaking "off the cuff" he said Moreton Island was on the commission's national register and "you may well find it is a candidate for section 30 of the federal Act."

Mr Wilcox said section 30 presented any action by federal authorities having an adverse effect on any part of an area on the register, if there was a "prudent and feasible alternative".

He said in the case of Moreton Island, no one had bothered to look for prudent and feasible alternatives.

"It simply has not been done," Mr Wilcox said.

The Federal Government may be forced to withhold approval for export licences of mineral sand products.

He said he would expect such a case would be heard in the Federal Court.

The Queensland Conservation Council president, Mr Jason Reynolds, said a public meeting would be held in the next few weeks to set up a Queensland Environmental Law Association, perhaps similar to Victorian and NSW models.

Mr Hewitt said he believed his portfolio should be expanded to include the administration of the Clean Water Litter and Beach Protection Acts.

Mr Tor Hundloe, a lecturer at Griffith University, agreed that for the environment department to be effective it needed to become a super-department, with the same staff and resources as the Treasury and Co-ordinator General's Department.

Mr Jim Fuller, state manager of the National Trust of Queensland, said Mr Hewitt was welcome to the responsibility for the National Trust. "Our present Minister appears to be too caught up in other matters too often to be concerned about the Trust," he said.

Mr Arthur Harrold, the Cooloola Committee president and the Noosa Parks Association secretary, said existing environmental legislation in Queensland was ineffective and public and even expert official government involvement was not encouraged.

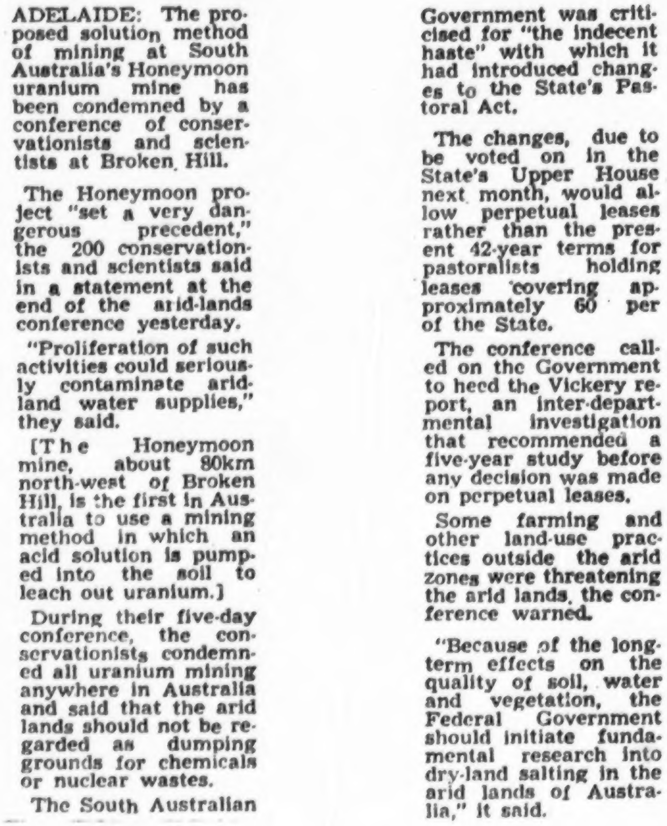
CSO: 5000/7549

AUSTRALIA

CONSERVATIONISTS CONDEMN HONEYMOON URANIUM MINE

Perth THE WEST AUSTRALIAN in English 28 May 82 p 18

[Text]



ADELAIDE: The proposed solution method of mining at South Australia's Honeymoon uranium mine has been condemned by a conference of conservationists and scientists at Broken Hill.

The Honeymoon project "set a very dangerous precedent," the 200 conservationists and scientists said in a statement at the end of the arid-lands conference yesterday.

"Proliferation of such activities could seriously contaminate arid-land water supplies," they said.

[The Honeymoon mine, about 80km north-west of Broken Hill, is the first in Australia to use a mining method in which an acid solution is pumped into the soil to leach out uranium.]

During their five-day conference, the conservationists condemned all uranium mining anywhere in Australia and said that the arid lands should not be regarded as dumping grounds for chemicals or nuclear wastes.

The South Australian Government was criticised for "the indecent haste" with which it had introduced changes to the State's Pastoral Act.

The changes, due to be voted on in the State's Upper House next month, would allow perpetual leases rather than the present 42-year terms for pastoralists holding leases covering approximately 60 per of the State.

The conference called on the Government to heed the Vickery report, an inter-departmental investigation that recommended a five-year study before any decision was made on perpetual leases.

Some farming and other land-use practices outside the arid zones were threatening the arid lands, the conference warned.

"Because of the long-term effects on the quality of soil, water and vegetation, the Federal Government should initiate fundamental research into dry-land salting in the arid lands of Australia," it said.

CSO: 5000/7551

BRIEFS

MURRAY RIVER ACCORD--South Australia is likely to be the big winner from the River Murray Waters Agreement announced in Canberra yesterday. The agreement gives the River Murray Commission the power to set water standards to reduce salt pollution. Until now the Canberra-based commission has been responsible only for water distribution. Serious salination problems, particularly in the lower reaches of the river, have caused a big row between NSW, Victoria and South Australia. The South Australian Government has accused NSW and Victoria of pumping thousands of tonnes of salt down the river to South Australia. The Murray is the lifeblood of South Australia and provides most of Adelaide's water supply. The need for a new Murray agreement was realised in 1973 but until now the States have not been able to agree to the terms of the new charter. The agreement was announced jointly by the Federal Minister for National Development and Energy, Senator Carrick, the NSW Minister for Energy and Water Resources, Mr Landa, the Victorian Minister for Water Supply, Mr White, and the South Australian Minister of Water Resources and Irrigation, Mr Arnold. They said the agreement would allow the commission to consider water quality in its investigations and operations, and to set standards for selected sections of the river. Engineering consultants are already investigating salt accumulation. [Vernon Graham] [Text] [Canberra THE AUSTRALIAN in English 19 May 82 p 3]

NSW NATIONAL PARK--A vast new national park will be established in western NSW, the Minister for Planning and Environment, Mr Bedford, announced yesterday. And it will help save one of the State's rarest animals, the yellow-footed rock wallaby. The first section of the new Mootwingee National Park, 160km north-east of Broken Hill, covers 33,600 hectares. Another area of about the same size will be added soon when the land purchases are completed. The park will then incorporate the Mootwingee historic site, an area rich in Aboriginal rock carvings and paintings. The first section of the park announced yesterday was formerly part of Gnalta Station, which the State Government bought when the lease expired in 1971. Mr Bedford said the wallaby would now have a permanent home in the park. "This park, in the semi-arid west, will preserve forever the habitat needed for the survival of the yellow-footed rock wallaby," he said. "It is critical that we act now before the species decline further. In less than 200 years of white settlement in the western region the large population of this timid little animal has been reduced almost to extinction. "This is a terrible indictment of the past and, in some cases, the uncaring attitudes of Australians towards native animals." The wallabies numbers have declined because of competition for food and shelter from sheep, feral goats and cats, rabbits, foxes and attacks by eagles. The second section of the park will preserve the spectacular Mootwingee ranges. [Joseph Glascott] [Excerpts] [Sydney THE SYDNEY MORNING HERALD in English 26 May 82 p 11]

BEACH HOTEL REJECTION--The proposed $7.1 million redevelopment of the Cottesloe Hotel has been shelved by the Cottesloe Town Counil. The council agreed that the development would have adverse effects on the neighbouring environment. The plot ratio of the building also exceeded the ratio in the town-planning scheme. There was not enough parking provided on site and it did not favour a proposal to build an underpass to a car-park on the beachfront, the council said. There were plans to restrict the height of buildings on the foreshore to three storeys and the proposed re-development involved a 10-storey building. Mr Tim Walsh, a spokesman for Fred Fairhead and Associates, the real estate company that made the application, said yesterday that the company would appeal to the Minister for Town Planning and Local Government, Mrs Craig. [Text] [Perth THE WEST AUSTRALIAN in English 28 Jun 82 p 12]

INDUSTRY CONSERVATION VIEW--MELBOURNE: Australia is in danger of conserving everything and developing nothing because of confused conservation policies, according to the Victorian Employers' Federation. It has called on the Federal Government to plan a national conservation strategy to avoid the evils of keen but unguided conservationists. The federation says that unless conservation plans are blanaced they will slow down development and cost the public jobs. "Over recent years, ad hoc conservation policies influenced by a number of community groups have delayed industrial projects in some instances and stifled them altogether in others," it said. "And with those delays and postponements, important job opportunities for our unemployed have been lost." The federation said that by and large industry and commerce should also be conservation-minded, if only to ensure its own future. The federation said that the timber industry was in fact "probably more conservation-minded than many of our self-styled conservationists." It said that State governments should also develop conservation strategies. [Text] Perth THE WEST AUSTRALIAN in English 31 Jun 82 p 4]

CSO: 5000/7551

DENUDATION OF MADHYA PRADESH FORESTS CAUSES ALARM

New Delhi PATRIOT in English 7 Jun 82 p 4

[Text] BHOPAL, June 6. Rapid denudation of forests in Madhya Pradesh because of reckless and illict felling of trees is causing alarm to the foresters.

While revenue from forests is showing upward trend year after year, at least one per cent of the forest area is being destoryed every year without replenishment. The forests yielded a record revenue of Rs 200 crores in 1980-81 as against Rs 150 crore in the previous year.

According to the Forest Department sources, total area covered by forests in Madhya Pradesh is supposed to be 36 per cent. But presently at more than 18 per cent is cover by live forests.

In fact, some of the areas shown as forests have been turned into vast wastelands. Bamboo has become scarce in Shahdol and adjoining districts which were once covered by bamboo forests. Unscientific tapping of bamboo for supply to Birla owned Orient Paper Mills at Amlai has resulted in denudation of bamboo forests.

This unfortunate phenomenon is the unlimited right given to bhoomiswamis to fell trees grown on their lands. Bhoomiswamis have played havoc with teak trees, which fetch fantastic rates. Teak wood worth crores of rupees is sold to forest contractors. In the entire region from Raigarh to Rajanandgaon, tak trees have been uprooted by greedy bhoomiswamis and traders.

Similarly timber trees are being felled indiscriminately throughout the State. In Raisen and Sehore districts big gang of forest marauders have virtually destroyed timber forests with the connivance of forest officials.

Within the next two decades the State may turn into desert if stringent steps are not taken to preserve existing forests.

Firewood is already in short supply in 18 of the 44 districts of the State.

Governor Bhagwat Dayal Sharma, who inaugurated 'environment week' yesterday here pulled up the Forest Department for not checking illicit felling of trees. The Governor said that every month timber valued at crores of rupees are being illegally from Budni forests near Hoshangabad to other States.

He accused the department of doing nothing to prevent this large-scale theft.

CSO: 5000/7066

IMPACT OF POWER DEVELOPMENT ON ECOSYSTEM DISCUSSED

Madras THE HINDU in English 5 Jun 82 p 9

[Text] NEW DELHI, June 4. Only seven per cent of the vast hydro-electric potential of the fast-flowing rivers and streams of the Himalayas, a total of nearly 43,000 MW at 60 per cent load factor, has been utilised till 1978.

Mentioning this here today, Prof. M. G. K. Menon, Member, Planning Commission, told a high-level meeting of Ministries of the Union Government, universities, geological institutes, scientists and socio-economists it was imperative that this potential should be tapped as the demand for power was expected to increase four-fold in the next 20 years.

Nearly 200 hydro-electric projects have been planned keeping in view both the available hydro-potential and the requirement of energy.

Today's meeting discussed the planning of hydel projects and the impact of the various activities of a project on the region's ecology and the local population. Other subjects included measures for watershed restoration, cost benefit analysis, the functional life of hydel projects and a multi-disciplinary review of the feasibility of setting up hydel projects in the hydel region.

Priority for rectification: Three working groups were set up to develop new approaches to utilise the Himalayan hydel potential without causing environmental imbalances and socio-economic stresses among the local inhabitants. It was also decided that in view of the fragile nature of the Himalayan ecosystem, the damage done to it by a variety of developmental activities must be rectified on a priority basis by co-ordinating the restorative work of different agencies.

Prof. Menon said it was very important that a multi-disciplinary examination of hydel and irrigation projects in the Himalayan region be carried out in order to minimise ecological damage from the execution of the projects.

Inadequate data: Though a large number of surveys have been carried out, the data collected are not adequate as there are still no answers to many basic questions. As a result, there has been support as well as opposition to the implementation of these projects.

It is, therefore, necessary that the data obtained on geological, ecological, geotechnical, climatological, environmental, meteorological and social aspects of the projects are complete, Prof. Menon said.

CSO: 5000/7064

BRIEFS

TAJ POLLUTION THREAT--NEW DELHI, June 4--The danger from air pollution to the Taj Mahal seems to be receding, according to the latest annual report of the Department of Environment. The concentration of the destructive sulphur dioxide gas in the atmosphere surrounding the Taj has decreased by 75 per cent compared to the 1980 levels, the 1981-82 reports says. It attributes the reduction to the closure of thermal power stations at Agra and the replacement of steam locomotives by diesel ones in the railway marshalling yards there. [Text] [Madras THE HINDU in English 5 Jun 82 p 6]

CSO: 5000/7065

BRIEFS

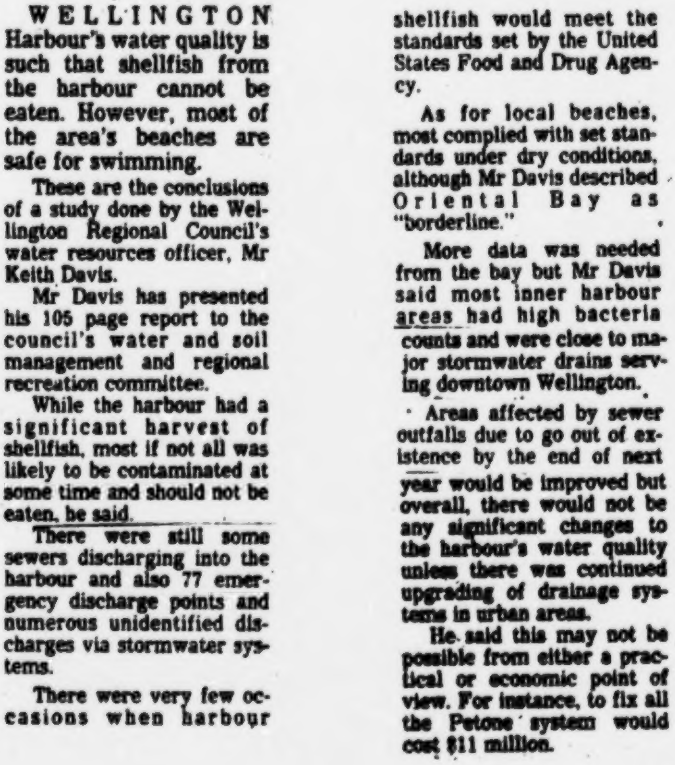
NAIROBI CONFERENCE REPORT--Emil Salim, state minister for supervision of development and the environment (PPLH), was received by President Suharto at the Bina Graha on Saturday [22 May]. He reported on the results of the UNEP (UN Organization for the Environment) conference held in Nairobi several days ago in which Salim took part. Toward the year 2000, Emil Salim said, many forests will be destroyed as a result of the increase in the lumber industry demand rising from 53 53 cubic meters in 1973 to 95 million cubic meters in the year 2000. Further he estimated that 250 million persons will require agricultural land, all of which has to be obtained by clearing forests. Prof Salim estimated that forests would be stripped to a high degree in the coming period because of the increase in these requirements. Therefore President Suharto stressed the need to give the greatest possible attention to reforestation in Indonesia, the minister said. Salim remarked that the conference produced the "Nairobi Declaration" which recommits all nations to the problem of environment. Regional cooperation was stressed as important for taking care of the environment. Replying to the report on the results of the UNEP conference, President Suharto asked that ASEAN subregional cooperation be stressed. According to Emil Salim, ASEAN has cooperated in this regard and has agreed to try to improve the environment of the Malaka Strait and on South Natuna. ASEAN also is exploring cooperation with Japan and Australia in addition to similar efforts being made with Europe. According to Salim, these ASEAN cooperation plans were well received by President Suharto. The chief of state asked that subregional cooperation be further increased, particularly under present international conditions. [Excerpts] [Jakarta KOMPAS in Indonesian 24 May 82 p 12] 6804

CSO: 5000/8010

WELLINGTON HARBOUR POLLUTION MAKES SHELLFISH INEDIBLE

Wellington THE EVENING POST in English 2 Jun 82 p 21

[Excerpts]



WELLINGTON Harbour's water quality is such that shellfish from the harbour cannot be eaten. However, most of the area's beaches are safe for swimming.

These are the conclusions of a study done by the Wellington Regional Council's water resources officer, Mr Keith Davis.

Mr Davis has presented his 105 page report to the council's water and soil management and regional recreation committee.

While the harbour had a significant harvest of shellfish, most if not all was likely to be contaminated at some time and should not be eaten, he said.

There were still some sewers discharging into the harbour and also 77 emergency discharge points and numerous unidentified discharges via stormwater systems.

There were very few occasions when harbour shellfish would meet the standards set by the United States Food and Drug Agency.

As for local beaches, most complied with set standards under dry conditions, although Mr Davis described Oriental Bay as "borderline."

More data was needed from the bay but Mr Davis said most inner harbour areas had high bacteria counts and were close to major stormwater drains serving downtown Wellington.

Areas affected by sewer outfalls due to go out of existence by the end of next year would be improved but overall, there would not be any significant changes to the harbour's water quality unless there was continued upgrading of drainage systems in urban areas.

He said this may not be possible from either a practical or economic point of view. For instance, to fix all the Petone system would cost $11 million.

CSO: 5000/9072

SAFETY REGULATIONS FOR PESTICIDE USE PUBLISHED

OW240844 Beijing XINHUA in English 0819 GMT 24 Jun 82

[Text] Beijing, June 24 (XINHUA) -- Safety regulations for the use of pesticides have been published by the Ministries of Agriculture, Animal Husbandry and Fishery and Public Health. In a circular accompanying the regulations, the two ministries urged the establishment of the responsibility system and employment of personnel specializing in plant protection.

Agricultural departments were urged to offer effective guidance in the scientific use of pesticides, train specialized personnel and provide information for the safe use of pesticides. Public health departments were told to prevent pesticide poisoning and threat those who are poisoned.

The classifications of the regulations are: scope and use of pesticides, purchase, transportation and storage of pesticides, instructions for use of pesticides, selection of workers to apply pesticides and personal protection.

Under the regulations, highly poisonous pesticides are not to be used on vegetables, tea, fruit trees or traditional Chinese medicinal plants. In addition to these plants, pesticides with a high remnant content are not to be used on tobacco, coffee, pepper or lemongrass.

The regulations forbid the transporting or storage of pesticides with foodstuffs or daily necessities.

Under the regulations, workers applying pesticides must be healthy persons who have received technical training.

CSO: 5000/2127

EXTENSIVE DESTRUCTION OF FOREST COVER REVEALED

Manila BULLETIN TODAY in English 15 Jun 82 p 7

[Text] NUWARA ELIYA. An aerial survey carried out by a Dutch team under the Nuwara Eliya integrated rural development program, has revealed, that within the past ten years, 30 per cent of the forest cover in Nuwara Eliya district has been destroyed. Further threats of destruction is imminent.

President J. R. Jayewardene and Minister of Lands, Land Development and Mahhaveli Development Gamini Dissanayake have sounded warnings to the authorities here to arrest this situation. They have urged meaningful steps be taken to check the disappearance of virgin forests in the hill-country which form the major catchment areas of the Mahaveli and other sources of irrigational projects of the country.

A top level conference with officials from the Forest Department, Ministry of Lands, Land Development (forestry and environment section) and voluntary organisations were here with the Government Agent in the chair.

The conference which went into various aspects, decided in general that the entire forest area needs protection and development. It reviewed the progress of the tree planting campaign commenced in the district on January this year.

A master plan on hill-country forest protection and development is being worked out with maps indicating the forest reserves and wild life protection areas, which will be ready by July, 1982.

The GA. Nuwara Eliya has organised a series of seminars and discussions at grassroot levels on this national issue.

CSO: 5000/5774

SUPPORT FOR ENVIRONMENT BY MINISTRIES URGED

Prague RUDE PRAVO in Czech 3 Jun 82 p 3

[Article by Jan Jelinek: "Let Us Not Owe a Debt to Nature--Man's Tenacious Struggle for a Healthier Environment"]

[Text] We regard environmental protection as an integral part of improving our living standard. This involves conscientious care for forest cultivations and elimination of the consequences of industrial pollution. The growing need of water demands considerable attention to the development and protection of water resources. Further deterioration of the current situation of water pollution must be prevented. Appropriate authorities must proceed more stringently in controlling and penalizing those who have caused harm to our environment for arbitrary reasons or due to gross negligence. It is the duty of all responsible authorities and a common cause shared by all our people to preserve the fundamental values of our environment, the riches of our nature and the beauty of our country. (From the report of the party's central committee to the 16th CPCZ Congress)

We were driving in May through the Chomutov district, enjoying the nature, the luscious colors and fragrant blossoms, passing modern housing projects and imposing communities, beautiful little parks and flower beds; we heard the noise from children's playgrounds and the gurgling of the brooks rushing in the Krusne Hory mountains. Everything appeared at its best, but the higher we were ascending from the valley to the mountain gaps and crests of the Krusne Hory chain, the faster the attractive coloration of the countryside began changing right before our eyes into a dispirited picture.

Forests Stricken with Pollution

That picture was painted by the 20th century man, an industrious steward as well as destroyer, whose heart is aching at the sight of the unappealing desolation he had caused. The hillside and the plains high in the mountains are disfigured by stumps of a forest strangled to death by industrial pollution. Fallen trunks of imposing spruce trees, tree stumps, bare spots of eroding soil we saw in the vicinity of Kalk, Bolebor, Klinovec, Medenec and St. Sebastian's Mountain were all affected by the noxious breath of inversion.

Foresters could tell tales about sulphur dioxide products severely damaging the natural ecological balance. Hundreds of hectares of evergreens had to be cut. Once upon the time working people used to come here for recreation. Resort hotels were to be built here. Crystal-clear air used to blow here. Splendid forests everywhere abounded with raspberries and blueberries and Boletus mushrooms were not a scarce find in their undergrowth.

Now more than 20,000 children are sent from the Chomutov area to breathe healthful ozone in open-air schools in the Beskydy, Sumava or Krkonose mountains... Even birds departed for some more hospitable quarters. Small wonder that in their drawings of the Krusne Hory trees toddlers in nursery schools color the leaves and pine needles brown. The dead wood of tree trunks offers most welcome feast for the bark beetle; in fact, that bug does not only gnaw the wood but also our guilty conscience...

From an elevation of 900 m above the sea level one can observe the smoke rising from the power stations in the valley, with its meddlesome tail sweeping the feet of the hills and the tops of the mountains and attacking the greenery as well as people's health. The pollution escaping from the stacks of power stations is the worst bane not only to the environment in the Chomutov district but also to the vicinity of Most, Teplice, Usti and Louny and to the entire North Bohemia lignite district, that "sharply" observed area predestined by the treasures of fuel hidden deep in its ground to a gloomy fate. It is imperative to exploit the coal seams in its mines for our power engineering and chemical industries, for lighting and heating our homes, for the operation of our factories...

Unprecedented Concentration of Power and Machine Engineering Facilities

The country of [the writer] Vaclav Rezac must pay really harsh but inescapable penalty for scientific and technological progress, and yet it is the same story all over the world. Our republic depends on its sources of energy and thus, the Chomutov district plays a key role in the economic potential of the CSSR. For better illustration it should be mentioned that it shares 22.2 percent in the statewide coal production, 15.5 percent in electric power generation and almost 50 percent in our entire pipe production...

Power and machine engineering industries are concentrated here to an unprecedented extent. The giant coal overcasts which produce 20 percent of the CSSR's lignite are located in the Chomutov-Tusimice-Prunerov triangle, on an area of only 50 square kilometers, and four thermal power stations with 3.2 GW capacity will generate here 20 percent of our republic's output of steam power plants. Here is a network of vital railroad tracks and of extensive technological facilities for long-distance transmission of heat and electricity as well as a metallurgical complex which processes 500,000 tons of steel annually.

Such a dense concentration of power engineering and raw material and material capacities on a small area is unique even on the world scale. No wonder that it negatively affects the ecology of the Krusne Hory mountains and their hillside because the fallout of air-borne dust is twice as high in the Chomutov area as in the vicinity of Ostrava, and along with downtown Prague it has reached the absolute high in the surveyed communities in the CSSR. Furthermore, sulphur dioxide escaping into the atmosphere has exceeded here the permissible level many times over.

The pollution from the chimneys of residential houses, boiler rooms and industrial plants heated with coal, and carbon dioxide emanating from spontaneous fires in strip mines must be added to this account. All those pollutants produce smog, particularly during the damp and cold autumn and winter months.

Stringent Measures by State and Party Authorities

Statistical data have sounded a warning signal for the Chomutov area about the loss of agricultural lands, higher incidence of diseases--particularly those affecting the upper respiratory tract--and about the migration of the population... Therefore, it will do no harm to remind ourselves of the wise and profoundly true instruction in Friedrich Engels' "Dialectics of Nature" urgently addressed to our souls: "... let us not be complacent about man's victory over nature. Such victory is always followed by nature's revenge. At first every victory leads to consequences which we had predicted, but on the second and third glance it produces other, quite unexpected results... And thus, at every step we realize that we shall never absolutely subdue nature but that our bodies, our blood and our brains belong to her, that we are attached to her and that all our possession of her depends on our ability to learn her laws better than other creatures, and to apply her laws correctly."

The state and party organs in the Chomutov okres do not permit anyone within their jurisdiction to pollute the environment without consideration. With all means available to them they are trying to prevent flue ashes and in the foreseeable future also gases emitted from power stations from escaping into the atmosphere. They intend to be more ingenuous in implementing decision No 252/1976 of the presidium of the CSSR government for improving the living conditions. Attempts will be made to eliminate harmful effects. Several hundreds of millions are being spent for recovery. Enormous funds have been allocated for capital investment in the public sphere, for medical care and more satisfying life of the people living and working in this district.

Furthermore, directives based on an area plan for the development of the North Bohemia kraj in the Seventh Five-Year Plan were adopted to eradicate the foci of air pollution. This document which was approved last year by the presidia of the CPCZ central committee and of the federal government and by the government of the CSR in expressed in the most comprehensible and urgent language and serves as a basis for modernization and innovative exchange of separators trapping solid pollutants released into the atmosphere from power engineering units in the first generation power stations of Tusimice I and Prunerov I.

The construction of a desulfurizing facility in the 200 MW unit in Tusimice II at the cost of over Kcs 1.25 billion is about to be launched. This astronomical amount demonstrates that we must pay dearly to protect our air and that our state does not stint funds for better environment. The technological equipment will be delivered from the USSR. It will remove 92 percent of sulfur dioxide and all flue ashes from waste gases and its side product--sulfuric acid--will be used in our chemical industry.

The pipe rollers and ironworkers of Chomutov deserve praise for their crusade for better environment. They are building desulfurizing stations for power gas which will not only reduce its hydrogen sulfide contents and prevent the strong odor in the shops and in the vicinity of the plant but also expand the service life of the brickwork in the furnaces and of the technological equipment. Separated sulfur will be used as additive to resin coating in roadbuilding and transportation communications.

An Urgent Political Task

Political representatives, economists, national committees and civic organizations in the district regard concern for healthy environment as their urgent and immediate political tasks, as confirmed also in our conversation with the leading secretary of the CPCZ central committee, Comrade Vladimir Vodrazka, and by the words of Eng Vladislav Vanicky, manager of the department for forestry and water management and agriculture at the district national committee. They are aware that no promises to the citizens and no bold and well intended programs can help if they are not implemented expeditiously, with the least possible delay.

Central authorities, above all the Federal Ministry of Fuels and Power Engineering, the Ministry of Forestry and Water Management of the CSR, and the ministries of health and of construction of the CSR should assist the district in this respect efficiently... Time's awasting. Each unnecessary delay and vacillation are pulling the noose tighter around nature's neck, humiliate her and harm our people and society. The moment has come to start dealing with urgent problems gradually but decisively.

If boilers for liquid combustion of coal would be installed in power stations as soon as possible, that, in addition to desulfurization, would prevent flue ashes from escaping into the atmosphere and furthermore, eliminate further requisitions of valuable farm lands for ash storage. The most advanced solution involves burning of high-grade fuels, especially natural gas, in power stations, however, this attractive option is still nothing but a dream because it depends on many technical and economic factors, as does electric power generation in our nuclear power stations. Nevertheless, this dream will be translated into realisty in the future.

The struggle to eradicate pollution in the Chomutov area is being waged step by step, with determination and deliberation. Old compact boiler rooms which supplied heat to residential homes are now being liquidated. It is prohibited to install new coal furnaces in communities and towns. The power stations in Prunerov will be converted into a thermal plant to supply steam and hot water to the town of Klasterec on the Ohre River and to the areas west of Chomutov.

Troublesome Spontaneous Fires

Fighters against air pollution are facing particular difficulties stemming from spontaneous fires whose smoke is rising to the skies near the Nastup mines in Tusimice. They began while the abandoned deep pit of the Ludmila mine was being reopened, and they are burning also on the line dividing two working faces in the Brezno and Merkur coal mines. The miners and mine rescue teams from Most are trying to put out the smoldering fires which are difficult to estinguish. Water alone cannot smother the fire and therefore, more effective methods are being sought.

Coal dust remaining in waste dumps is also burning. It had been covered with bulldozed-down soil to prevent air from penetrating to it. However, the miners of Tusimice have been slow in fulfilling the prescribed measures and even had to pay Kcs 50,000 in fines. Eng Vladislav Vanicky says, "We are fully aware that despite all their dedication and their difficult situation the miners lack favorable conditions to extinguish spontaneous fires due to shortages of appropriate mechanical equipment and of spare parts... We realize that we must not accept this excuse. We demand from them and other air polluters strict discipline and self-control. After all, cash penalties are but a bandage that cannot help nature."

The Cross with Flue Ashes

The dilemma of [the Czech writer Jan] Neruda with the straw mattress seems quite picayune when compared with the problems of ash storage distressing economic managers of the power stations in Prunerov and Tusimice: where to put millions of tons of ash annually, once it floats through the pipeline from the power engineering giants into sludge tanks! Indeed, that is a colossal lake of waste. Just imagine: if the power stations were to store their ashes until the end of their service life, the Nechranice dam with the capacity of one quarter of a billion cubic meters of water would have to be emptied! Floating pits no longer suffice. Therefore, according to the district program for development, new settling basins are being planned. Nevertheless, the plan has suffered a setback because the Czech power engineering works, the Energoinvest in Prague, failed to give this problem due attention and to this day is literally improvising, which is most astonishing.

We stopped at the dike of a sluice canal in the Tusimice power station, chockful of black powdery substance. The wind from Krusne Hory was blowing the dry ashes all around. At the sight of the dust reservoir memories evoked the harshness of nature when in May 1981 a huge cloud of dust rose from this reservoir and enveloped Kadan, a colony of summer cottages, the greenhouses of Sempra, all the greenery... Nature and local residents got a terrific licking.

Even the fine of Kcs 6.5 million which the power station had to pay could not reverse the damage. Responsible managers must proceed very strictly in enforcing regulations concerning floating ashes and regular watering of the drying surface in reservoirs. No excuses will be permitted. Other feasible solutions have been offered, for instance, to cover flue ashes with hydroponic cultivation or asphalt coating. Other proposals concerned recycling the ashes in the production of shaped bricks and other prefabricated materials. The problem is to find suitable bonding agents and to build such an expensive manufacture of construction materials as cheaply as possible.

Green Light for Green Programs

Nonetheless, the people in the Chomutov area have not given up. A far-reaching movement has been mobilized in the district to reverse the ecological damage in their countryside. The group is fully aware of its duties and its ethical credo is to respect the laws of nature, to protect her by all means and to preserve a healthy environment, clean water, abundant forests and farm lands for next generations. The people have not accepted with resignation the harsh fate to which the coal deposits in the bowels of the earth under the Krusne Hory had doomed them.

The Green Program outlined for the 1981-1985 period and planned for extension to the following years is waging a noteworthy struggle in the Chomutov area. Its participants deserve our respect and dedicated support because mere words mean nothing but specific actions are of great importance. National committees, sectors of the National Front, factories and schools, miners, power engineers, foresters, fishermen, health workers, well, everybody, all citizens are interested in implementing the election program.

Its "sacred" focus is on reforestation of thousands of hectares in the affected areas of Krusne Hory. Trees resistant to pollution, both deciduous and evergreens, such as [prickly] spruce, birch, rowan, will be planted there. The forest will be beneficial for water economy and the climate. At the same time, forests will be drained, fertilized and limed, areas for tree nurseries expanded and protected against vermin, reservoirs for potable and service water will be built, and life will be resotred in the countryside devastated by mining.

The residents of the Chomutov area are not waiting for some savior. They organized programs to improve the environment and to mitigate the effects of pollution. This has been confirmed by hundreds of thousands of hours spent at volunteer work, which best demonstrates their feelings about their country. Most of them have put deep roots in that country and want their children and grandchildren to live a happy life there. They realize that lamentations do not help. The struggle is going on and it is not in vain!

It is a joy and pleasure to go for a walk and rest in the valley of Horni Halze under the canopy of verdant vegetation unaffected by smoke pollution. A green oasis in the park of the castle in Klasterec on the Ohre River and the park in Kadan are meticulously maintained. Visits to the sprawling forest park in Kamenec Lake in Chomutov, a European rarity with its forest grove of chestnut trees producing edible fruit, with its rare fauna and water fowl, is most invigorating. It is beautiful experience to see the fruit trees in bloom and the soft grass sprouting on the recultivated waste dumps of the Nastup mines in Tusimice, to watch the lightning-swift trouts swimming to and fro in the Ohre River under the levee of the Nechranice dam which has become a popular summer spot for swimmers and water sports enthusiasts.

It would be blasphemy to describe the Krusne Hory mountains and the areas in their valleys as an unsightly, dying country.

It can boast also an attractive face. The towns of the Chomutov district have about 270 hectares of common green. For example, this year citizens' committees in the district town, in Jirkov, Kadan, Klasterec on the Ohre River and Venjprty accepted into socialist care an additional 8 hectares of public areas and protected zones. Scores of hectares of public green zones are cared for by the villages in that district. Such a sanitary strip of shrubbery and flowering plants, trees and reservoirs provide a good filter against dust and ashes and act as do the lungs to help people breathe cleaner air and offer them a soothing hinterland where people can restore their energy.

Citizens of model communities in Perstejn, Radonice, Mastov, Brezno near Chomutov and elsewhere have set an example by establishing green zones and beautifying their homes in the self-help project "Z". During the current five-year plan selected programs will expand the project, among other things, to additional scores of hectares. The Chomutov forest park, the sanitary zone in the Bezruc Valley, the reconstructed castle park in Cerveny Hradec near Jirkov will be expanded and in 1986 the waste dumps in the Nastup mines and many other locations will be recultivated.

Next to the Nechranice water works, the mountain dams in Krimov and Kamenicka and in particular, the Prisecnice dam are beneficial for the climate in the Chomutov area and supply good potable water not only to this environment but also to parts of the Most, Teplice and Louny districts.

Solution: To Eradicate the Causes of Pollution

Comrade Vladimir Vodrazka, the leading secretary of the Chomutov district CPCZ committee, said critically: "All of us must be concerned about cleaner air. We cannot vacillate and postpone the solution of problems affecting our steadily deteriorating environment. Empty promises, stacks of papers containing theoretical solutions and numerous laws adopted for environmental protection will come to nought if we do not receive more efficient support from appropriate ministries in fulfilling the tasks assigned to them by our government.

"We in this district cannot cope with all our problems. That is beyond our power. In this respect the national committees as the representatives of people's power as well as our citizens need and expect from the ministries more versatile cooperation. It is not enough to "put out" the consequences of environmental pollution. We have been doing that in the Chomutov area but first of all, we must eradicate the causes of pollution. That is the only correct, fundamental solution."

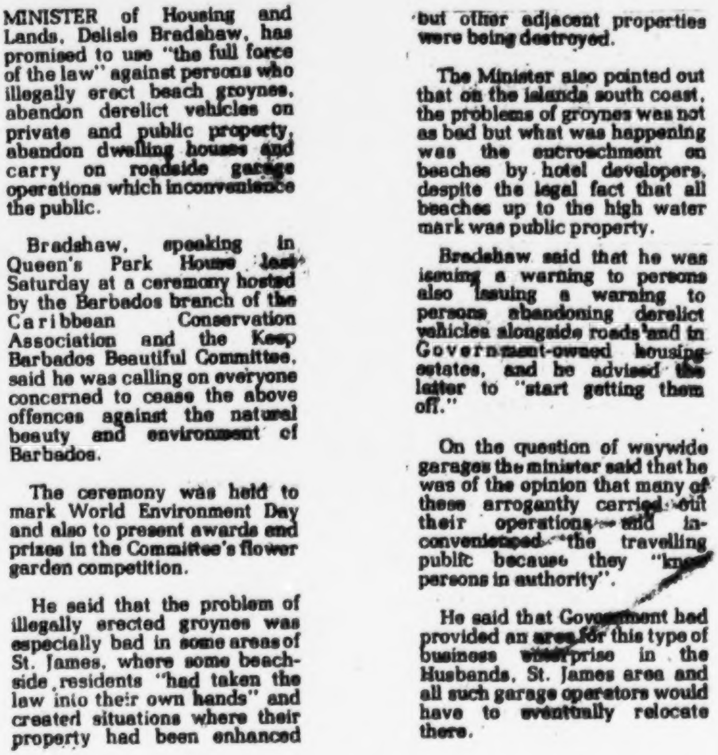
Indeed, we are very much indebted to nature--not only in the Chomutov area and in North Bohemiz but also in other corners of our lovely homeland, from Sumava to the Tatry mountains. We all, without exception, have the obligation to respect and protect nature, not only to overpower her like "boors" but return her like knights, to cherish her as our mother and life-giving force for all her generous gifts and to repay her our immense debt for the sine committed against her that no penalties can every approximate. After all, to quote Engels' words, "we belong to her with our bodies, blood and brains and we are attached to her."

9004
CSO: 5000/3016

GOVERNMENT WARNS GROYNE BUILDERS, OTHER ENVIRONMENT SPOILERS

Bridgetown THE NATION in English 8 Jun 82 p 2

[Text]



MINISTER of Housing and Lands, Delisle Bradshaw, has promised to use "the full force of the law" against persons who illegally erect beach groynes, abandon derelict vehicles on private and public property, abandon dwelling houses and carry on roadside garage operations which inconvenience the public.

Bradshaw, speaking in Queen's Park House last Saturday at a ceremony hosted by the Barbados branch of the Caribbean Conservation Association and the Keep Barbados Beautiful Committee, said he was calling on everyone concerned to cease the above offences against the natural beauty and environment of Barbados.

The ceremony was held to mark World Environment Day and also to present awards and prizes in the Committee's flower garden competition.

He said that the problem of illegally erected groynes was especially bad in some areas of St. James, where some beachside residents "had taken the law into their own hands" and created situations where their property had been enhanced but other adjacent properties were being destroyed.

The Minister also pointed out that on the islands south coast, the problems of groynes was not as bad but what was happening was the encroachment on beaches by hotel developers, despite the legal fact that all beaches up to the high water mark was public property.

Bradshaw said that he was issuing a warning to persons also issuing a warning to persons abandoning derelict vehicles alongside roads and in Government-owned housing estates, and he advised the latter to "start getting them off."

On the question of waywide garages the minister said that he was of the opinion that many of these arrogantly carried out their operations — and inconvenienced "the travelling public because they "knew persons in authority".

He said that Government had provided an area for this type of business enterprise in the Husbands, St. James area and all such garage operators would have to eventually relocate there.

CSO: 5000/7550

IMPACT OF ENERGY DEVELOPMENT ON ENVIRONMENT ASSESSED

Georgetown SUNDAY CHRONICLE in English 6 June 82 pp 6-7

[Article by Mahamad Hanif]

[Text] IN EVERYDAY speech when we refer to our surroundings, that is, all that is close by, we use the term "environment".

Literally the term "environment" refers to the physical and biological life-supporting system or biosphere, "the thin layer of soil, rock, water and air that surrounds the planet earth along with the living organisms for which it provides support, and which modify it in directions that either enhance or lessen its life-supporting capacity". Homo sapiens, or human beings, are the most important species that depend on the environment for continued survival.

Concurrently, the "freeness" provided by the environment has been taken for granted and changes have continued apace, some beneficial and others leading to the degradation of environmental quality or irreversible damage to the environment.

Most of us are aware of the diversity of our natural resources, and whether they are inexhaustible, renewable or non-renewable. Are we just as knowledgeable about the conservation of these resources?

Impact of Energy Development on the Environment

Guyana's economic development is linked to industrial expansion which depends on the production of energy. Here the choice lies between the development of its proved hydropower resources or the utilization of its vast untapped biomass resources for the generation of electrical energy.

At present the escalating costs of energy generation using imported fossil fuels limit industrial development. By the turn of the century provided the right options are chosen industrial economic growth is predicted.

A short list of commercial energy sources includes hydropower, biomass and fossil fuels. Hydropower development would have significant adverse impacts on both the terrestrial and aquatic environments depending on the size of the project and site-specific factors. Disrupting of river regimes would be detrimental to aquatic productivity leading to loss of fisheries.

Malaria, snail fever and other water-borne diseases would pose grave public health problems. Valuable forests, mineral deposits, agricultural lands and human settlements would be lost due to the creation of water storage basins.

Biomass (fuel wood, charcoal) is an increasingly important energy source both in urban and rural communities replacing kerosine and natural gas as domestic fuel. Steam turbines utilizing fuel wood for the generation of electricity can solve our immediate and future energy problems.

Forest exploitation for large quantities of fuel wood would destabilise river basin catchment areas if quick-growing species of trees are not planted on a plantation basis to replace the primary vegetation and limit erosion and seasonal flooding hazards.

Charcoal is utilized mainly for domestic cooking. It s production could be controlled to minimise its impact on the integrity of the forest environment.

Impact of River Basin Development Projects on the Environment

In Guyana's coastal zone three major river basin development projects have been established namely, the Canje River Basin Project, the Abary River Water Conrol Project, and the Tapakuma-Supenaam River Project. For the sake of brevity only the first mentioned project would be described here.

A sluggish, deep-flowing, silt-free stream, the Canje River is the chief right bank tributary of the Berbice River. It rises in the elevated White Sands area 224 km from its estuary and flows parallel to the seacoast about 24 km inland.

Its 3,458 km2 drainage basin lies within the White Sands Plateu in its upper course and the coastal wetlands in its middle and lower courses. There is an extensive dendritic system of riverine tributaries in its catchment with natural surface-storage areas formed by the low-lying swamps and marshes under vegetation cover including the Potoco Swamp and a large area on its right bank between Torani Tail and Ikuruwa Mouth. Beyond the open coastal savannas are the low-lying swamps and marshes merging into the gently undulating uplands under scrub vegetation, savannas and forests. The White Sands area yields large volumes of groundwater supplies which maintain the normal base flow of the mainstream during the dry season.

The Canje River System is being developed for multiple use purposes including flood control, drainage and irrigation projects as well as transportation. Planning, development and management of existing and proposed projects in the river basin and contiguous areas should be carefully integrated to regulate land use practices and minimise the impact of floods and droughts. Presently the chief sugar cane and rice growing areas lying between the right bank of the Canje and Corentyne Coast, approximately 36,437 ha are supplied with irrigation water from the Canje river supplemented by water from the Berbice river through the Torani Canal which became operational in 1958. A gated 22.56 km gravity flow link canal connects Torani on the Berbice and Friendship on the Canje.

A massive rehabilitation and development programme ('79-84) is being implemented. We spend large sums of money to establish and operate flood control projects to safeguard and increase the productivity of our valuable coastal wetlands. Water control is a useful tool and must be applied to the task for which it is designed. How many of our farmers fully understand its capabilities and limitations? As a user of water are we more concerned to see how fast we can get it from our fields into the rivers and out to sea? If we wish to manage the water resource of our wetlands effectively we need to know the answers to such criticial questions as--

What water levels and soil properties should be achieved in our wetlands to improve their productivity for crops, forage and wildlife and to conserve groundwater supplies?

The adverse impacts on the environment resulting from the manipulation of the hydrology of the river systems would to some extent be minimised if our land use measures maximise the role of the soil in water supply and flood prevention. Adequate measures would have to be taken to lessen the impact of pollution of water-ways in the basin area by pesticides, fertilizers and effluents from processing plants. Monitoring of the long-term effects of river basin development on the wetlands ecosystem is suggested.

CSO: 5000/7550

SCIENTISTS DISCUSS NILE POLLUTION THREAT

Cairo AL-MUSAWWAR in Arabic No 3005, 14 May 82, pp 22-25

[Article by Rabi' Abu al-Khayr: "The Nile Is Still Clean, But Scientists Are Sounding the Alarm!"]

[Text] All over the world, rivers are threatened with pollution.

There are many types of pollution increasing every day due to residential activity and advances in technology at the expense of the environment. But what worries the specialists is that the natural capacity of rivers to cleanse and purify their water is weakening in the face of pollution sources. In Egypt the Nile River, considered to be one of the cleanest rivers in the world, remains endangered. Egypt's scientists are sounding the alarm, saying yes, the Nile is still one of the cleanest rivers but we should be careful now that residential activity is increasing along both banks.

The question now is, how do we safeguard the cleanliness and purity of the eternal river. Studies undertaken at the National Research Center prove that from Aswan to its mouth, the Nile is being affected by all forms of life and environmental activity, both alongside and inside the river. Studies show an increase in salt and chloride content. Chemical and biological pollution increases every time the river turns its direction north, and especially at its tributaries Dimyat and Rashid. At these tributaries, and especially at Rashid, it has become very evident that the river has lost its capacity for purifying and cleansing itself naturally.

At a water pollution workshop in the National Research Center, AL-MUSAWWAR met with pollution experts and asked, why is the Nile losing its natural capacity for cleansing and purifying itself? Dr Muhammad al-Abayi', assistant director at the Center, said: "Our specialists at the water pollution workshop first started studying the Nile's water pollution in 1963 in the region located between Hilwan and al-Qanatin al-Khayriya, a distance of about 60 kilometers. From the perspective of micro-biology, the test results indicated that the pollution level before the Aswan Dam was built was linked to the flood season. That is due to the fact that during the flood season, foodstuffs carried in the water helps raise the total number of bacteria and pollutant indices. These latter consist of groups of bacteria which when found in water indicated the existance of excremental pollutants in the water. In that case the chances for various kinds of intestinal diseases increase. Measurements of indices taken during the flood season, before the High Dam was built, show an increase in pollution during the remaining months of the year, which means that when the floods rose, the water used to carry along with it waste from factories, people, and animals. Since the High Dam was built, studies have focused on microbic content and pollution indices. The results show that the pollution level is no longer linked to the flood season but is linked to the intensity of human and agricultural activity and to the increasing, uninterrupted use of the Nile river to carry tourist boats. In addition, the Nile's water level has fallen noticeably, which along with the increasing numbers of factories and, hence, waste, has provided new opportunities for pollution to accumulate. Accordingly, the river's capacity for natural self-purification has declined. Another cause [of pollution] is that there no longer occurs the cleansing process that used to ensue during the flood season, contributing to the accumulation of polluting microbes and their increase throughout the river."

Dr Hilmi al-Zanfali, another assistant at the water pollution workshop has a different opinion on why the river is no longer capable of cleansing itself in the North: "The population increase in the northern Delta region, together with a lack of supervision and a lack of alternative methods of disposal have led to people disposing their waste in the river. This is in addition to factories which also dispose of their industrial waste in the river without treating it."

Dr al-Zanfali adds: "The National Research Center's studies have taken on a new forum thanks to a joint project undertaken between the Academy for Scientific and Technological Research and the American University of Michigan, and funded by the Environmental Protection Agency in the United States. The study centered on the effect of chemical and microbic changes from the Lake Nasir region up to the mouth of the Nile at Rashid and Dimyat. It showed that in areas of dense population the microbic content of the river is greater. But the study also showed that despite an increase of pollutants up to where the Nile meets, the river has so far been able to contain the problem in the south due to its high outflow. For this reason, the river's condition is much better in the south than in the north."

Dr Shawqi al-Huwari, a researcher at the workshop, adds: "Pollution indicators can be either bacteria or viruses. Viruses are not used as pollution indicators, because they are at the same time one of the causative factors of many diseases, both familiar and unknown to us, such as cancer. Studies undertaken by the pollution workshop on the river's flow prove that the variety and the concentration of viruses tend to increase as the river flows northward and concentrate from Hilwan to al-Qanatir al-Khayriya. This indicates man's abuse of the source of life, the Nile ..."

[Question] How do these pollutants enter the Nile?

[Answer] Dr al-Huwari: Pollutants enter either through man himself, as a hostile element: this includes the ordinary sweeping of human waste, or deposits of sewage; or it might happen through non-human ways which might still be controlled, e.g., the wind could blow along dirt loaded with microbes; the current irrigation system allows the use of excessive quantities of water which, after being mixed with dirt, is poured back into the river along with the pollutants it carries. These could include insecticides or microbes present in organic fertilizers, whether in a small irrigation canal or in a large conduit that flows into the Nile.

AL-MUSAWWAR met with Dr Ahmed al-Rifa'i Biyoumi, head of the Marine and Fisheries Institute, and posed this question: Is the Nile polluted now? What is the extent of the effect of this pollution? Dr al-Rifa'i answered: "The Nile's problem is everyone's problem. People are being afflicted with diseases caused by human and industrial waste, and insecticides. We must sound the alarm in the period to come, because prevention is better than treatment. We must beware of what the Nile could become in the future. I believe that the solution to this problem does not lie in the direction of stricter supervision over factories that disposed their waste in the Nile, nor in placing laws for the protection of the Nile. The real solution is in instituting networks of health care in the villages and studying ways to change the customary behavior of the typical Egyptian with respect to the water. Also, any plans for exploiting tourism on the Nile should be accompanied with precautions against pollution by tourism, especially pollution resulting from tourist boats travelling up and down the river."

Dr al-Rafa'i added: "An important issue that must be studied is how to treat the waste that is polluting the Nile river. It is necessary to ask existing factories to treat its own waste before depositing it in the Nile. This issue may be viewed as economically advantageous. Although it is true that the factories will bear the cost of waste treatment, we should look at it from the point of view that man's health is priceless, and that the state already spends money on health care for its citizens. I say to everyone that the individual in Egypt should be placed before any other consideration. We must design the factories yet to come...As we speak of the Nile's cleanliness and safety from pollution, we must consider another issue: a return to the use of water or liquid wastes will avoid pollution and from whose chemicals we can derive some benefit. The question arises: Why recycle water when it is so plentiful in Egypt? The answer is that despite the abundance of water we are still in need of water resources, particularly since we are committed to a process of agricultural expansion and reclamation of land. Recycling water is now necessary. In foreign countries such as West Germany water is recycled more than 14 times. It is a process which we should learn now, with the aid of researchers and specialists. For example, how do we recycle the flow of clean water for agricultural purposes? I would like to emphasize that we are in need of [health] stations and networks to observe and monitor pollution. More importantly, to be effective such stations must be equipped to sound the alarm [in the event of health hazards]."

[Question] Can we call the Nile a clean river?

[Answer] The Nile is currently considered to be relatively clean. But the danger of the problem will be apparent in the future, especially with the increase in population activity and the establishment of factories. There is another kind of pollution afflicting the Nile, aesthetic pollution. Just as people are stricken with disease as a result of pollution, the Nile has taken on a sort of blackish look. Once it was surrounded with greenery; now it is surrounded with piles of refuse, in addition to the cement factories' smoke which pollutes the Nile through poisonous chemicals mixing with the river water. In this sense, the Nile is being afflicted with aesthetic pollution. I fear that it is increasing, and that not even the most drastic cosemtic surgery can help.

[Question] Is there a connection between the Nile's pollution and diseases afflicting people?

[Answer] (This question was answered by Dr Muhammad Husni Shahata of the Health Ministry's Clean Environment Administration): Insecticide waste mixed in with drainage water and irrigation canals affects the nervous system and can lead to poisoning. Some of this waste is connected with cancer. There are certain groups of diseases caused by tiny living organisms transmitted through water--viruses that could cause infectious liver diseases, diarrhea, and infant paralysis. Then there is the bacteria that causes dysentery, typhoid, and cholera, and parasites which cause amoebic dysentery and bilharziasis.

Dr Shahata added that after the High Dam was built, the Nile's water quality changed. This led to the appearance of certain kinds of snails which had crawled to the upper Nile, which in turn led to an increase in the incidence of Bilharziasis. There are many dangerous diseases which could cause epidemics like cholera upon reaching the Nile's waters.

[Question] Is there a connection between the Nile's pollution and summer diseases?

[Answer] There may be a connection, because microbes grow in quantity in the summer. Therefore, it is easier for them to spread in water. That's why Law No 93 of the year 1962 forbids the disposal of sewage waste and industrial waste in outflows except under certain sanitary conditions. That's why the Health Ministry's Clean Environment Administration in the provinces selects samples of the Nile's water and of drinking water to ascertain the presence or absence of pollution. It has found that the level of pollution in the Delta region is greater than in the eastern part, due to the fact that the Nile's tributaries are disparate and flow directly into the villages where population density is higher (in contrast to the eastern part .

Dr Imam Zaghlul, president of the Vaccination Administration says: "The water canals that branch out from the main stream of the Nile has a high pollution level. As for the mainstream, in my opinion the pollution level is considerably less than that of European rivers like the Seine, Thames, and Danube. These latter rivers are loaded with chemical waste to the extent that they cannot be used for drinking."

[Question] Isn't sanitary waste thrown into the European rivers?

[Answer] Definitely. And if anyone throws human waste into the Nile emitting organic pollution, then that is a crime punishable by law. That is one of the principal causes of bilharziasis, especially by way of the water canals and tributiaries linked to the Nile directly. In my view, penalties for pollution of the Nile should be stiffer, because the Nile is the source of life itself in Egypt.

Insecticides and the Nile

The result of the increased use of insecticides worldwide has been largely negative, according to the type of insecticide, the poison it contains, and its duration in the environment. Often, pollution of the Nile by insecticides has led to the extermination of certain types of crustaceans, such as the daffea, which feed on watermoss. As a result, there has been an increased growth of watermoss. This in turn constituted a problem for the water purification plants, because watermoss can change the taste and odor of water, and clog purification filters. Several studies done at the National Research Center and in other countries show that the traditional methods for extracting insecticides from contaminated water are ineffective. Hence, many countries are using activated carbon as a highly effective means of containing organic pollutants which affect the special properties of water and which might make it hazardous to health.

[Question] How can we limit the negative effects of insecticides and at the same time make use of the insecticides?

[Answer] (Dr Anwar al-Dib of the National Research Center responded): Some Western nations found that the first step was to stop using the advanced hydrocarbon group of insecticides like D.D.T., because of the way it lingers in the environment and accumulates in the soil, in fatty tissues, and in the liver, which increases the chances for illness. These Western nations have now started to use a kind of phosphoric insecticide which dissolves easily in soil and water in short periods of time. Therefore, the effect on the environment would be very limited. We should be using insecticides that attack the intended undergrowth and which won't affect other lifing organizms. Many countries won't allow insecticides to circulate before running special tests to confirm their affect on undergrowth (shrubs) and to discover any undesirable side-affects they might have. We need to study our own insecticide needs.

Weeds and a lack of oxygen in the water expose the Nile river, irrigation canals, and tributaries to the dangerous phenomenon of the spread of weeds and water plants. Ad Dr Ahmad Muhammad Isawi of the Institute for Marine Sciences and Fisheries says, these weeds reduce quickly, especially when the water current is calm, as happened after the High Dam was built. They grow at such a fast pace that they begin to form a dam that completely stops the water's flow. These weeds constitute juice for bilharziasic snails. Also, when these weeds thicken they tend to decrease the amount of oxygen in the water. This in turn leads to the smothering of underwater life, especially fish. Reports have been compiled which show that an area of one feddan of the Nile river causes an estimated amount of pollution--such as attrition of oxygen in the water--equal to that of 40 people.

In the National Research Center, parasitology and animal diseases laboratory, scientific studies are being undertaken on the effects of the Nile's pollution on fish. As Dr Muhammad 'Adel 'Abbas, the laboratory head, says, the studies show that the fish act as a conduit between parasites and bacteria, and people. For this reason, the Center and the Food and Drug Administration in the U.S. have contracted to study the spread of parasites and bacteria from fish to people. The primary objective was to make a thorough survey of the effects of seasonal changes on parasites and bacteria, and their relative presence in fish throughout the year. It was found that their relative presence is higher in summer than in winter. It was found that the kind of fish most responsible for transmitting bacteria and parasites is the striped mullet, which has a presence of up to 70 percent. Its danger lies in the fact that striped mullet is used in the preparation of [small salted fish]. It is followed by the bolti, with a presence of 40 percent, and then by a variety of sheatfish with up to 20 percent. As for bacteria-related diseases, it was found that the fish of the Nile and of the lakes transmit microbes that cause fevers and intestinal disorders. It was also found that fish caught in the wider and deeper water canals contain a lower presence than the fish found in shallower water. And fish found nearer to the sources of the water's outflow are a factor in water pollution. In the opinion of Dr Muhammad Abbas, the solution is to decrease the outflow of water in the canals and treat the chemical waste that flows in the Nile and pollutes its fish, exposing people to different diseases.

Dr al-Rifa'i Biyumi, director of the Institute for Marine Sciences and Fisheries, says that marine life can be an indicator of the level of pollution in the water. A process of measurement and observation can determine whether a region is clean and free from pollution in its marine life. An analysis of a variety of its marine life will indicate the existence of pollution. This is due to the fact that some fish, like the bolti and water moss, store within them heavy minerals like zinc and mercury.

A report prepared by researchers attached to the Academy for Scientific and Technological Research and working on the Nile River/Lake Nasir project confirm the average amount of disinfectant in Lake Nasir's surface averages about 14 billion cubic meters annually, or about 11 percent of the lake's reservoir size. This fumigation has led to an increase in the water's salts by about 15 percent. The research team set about the project by taking measurements of the river, since 1975, in five sectors: Aswan, Asyut, Cairo, the Dumyat tributary, and Rashid. The results proved that large quantities of sanitary water are recycled to the river and to the main agricultural canals, amounting to 3.5 billion cubic meters annually in the Delta region. The result of this is an increased concentration of dissolved mineral salts like nitrogen and phosphate. Also, the quantity of river fish was affected after the High Dam was built, which led to a decrease in the variety of commercial fish in places where the Nile is deteriorating, like in the northern Delta where only 17 kinds of commercial fish are to be found today as opposed to the 47 kinds that used to be found in 1948.

Dr Ibrahim Yunis, head of the Environmental Information Center for the Nile River, a part of the National Research Center, asserts that the initial results of studies done on the Nile with regard to agriculture in the al-Munia, al-Buhara, and al-Mansura provinces indicate the following.
- A dangerous accumulation of salts was found in the region of al-Munia, which uses surface (shallow) water at the rate of about 25 kilos per feddan per month. The region of al-Mansura, which uses deep water, was found to have a steady flow of salts. A detailed study was taken to estimate the quantity and kind of irrigation water entering the Nile River's delta and flowing out to the Mediterranean, in order to determine the extent of its usefulness for recycling. The study's initial results show that the quantity of irrigation water being lost in the outflow to the sea is approximately 26 billion cubic meters annually.

The report recommended that, in regard to Lake Nasir, there must be more studies taken in order to forecast the long-term effects of the residue in the Lake's reservoirs, and the qualitative changes that occur in the water environment with respect to fish resources and coastal evolution. Problems of pollution in the Lake are going to have a noticeable impact on the Nile's flow. With respect to the Nile river, the report says: The Nile River may be considered clean in comparison to the rivers of Europe and North America. It has problems of both a local and an international nature. Based on the research done so far, the quality and characteristics of the Nile river's water are starting to deteriorate. The river is in danger of becoming one big irrigation canal full of wastes. Gigantic efforts are required to overcome or control its pollution. Law No 93 of the year 1962 is no longer effective.

Studies pertaining to the Nile river recommend the development of comprehensive programs for the administration of the river, taking into account the multi-purpose used to which it is put. There is a need for more realistic legislation for the protection of the river from pollution, accompanied with more effective guidance. Al-MUSAWWAR met with the expatriated Egyptian scientist Wahid Shendi, head of the Environmental Pollution Center at the University of Southern California in the U.S. It is one of the most modern centers of environmental pollution in the United States:

"Egypt's environmental pollution problem, in the water, air, soil, etc., may be divided into two parts, in my view: part organizational and part legislative. We are in need of an organization that can obtain the required information and statistics on all forms of pollution. We need laboratories equipped with the most modern equipment. In my opinion, once we admit that we have a pollution problem, we have already started to find a solution.

"With regard to the legislative aspect, currently existing laws issued for the protection of the environment, including water, from pollution must be enforced. It is necessary to issue harsh laws that will be effectively enforced. We must see that the health of the Egyptian people and the safety of the Egyptian environment are of paramount importance. In the U.S., the Attorney General prosecutes cases in court and imposes penalties on people who pollute the environment."

[Question] Dr Shindi was asked, what is the problem opposing the protection of the Egyptian environment from pollution?

[Answer] According to the UN's estimate, Egypt lacks laboratories [facilities] at the national level and at the provincial level that might undertake constant measurements af all kinds of pollution, from Alexandria to Aswan. These laboratories should be advance warning stations in case any pollution should be found in the Nile or any other water. The state must equip these stations with the most modern equipment and train cadres of scientists in this field. I propose that a part of the foreign aid received by Egypt be allocated to purchasing this equipment and training researchers in its use. There should be contact with foreign scientific circles. I am ready to help in establishing these laboratories and provide experience so that we can lessen the harm caused by this problem, a problem which causes many diseases such as cancer, which has been seen to be spredding lately.

Long ago poets used to say that Egypt was the gift of the Nile (the source of life in Egypt). Will we allow our eternal rile river to remain incapable of purifying itself? The question that poses itself is that despite all the scientific conferences held from time to time for the study of environmental pollution, including pollution of the Nile, and despite all the recommendations that came out of these conferences, the eternal Nile is still threatened by pollution. The strange thing is that Law No 93 of the year 1962 provides for penalties ranging from fines of not less then 25 piasters, and from 25 to 60 guineas, plus imprisonment not to exceed three months for anyone polluting the Nile, but are these penalties enough to protect the Egyptian's health? I don't think so! Our ancestors were the ancient Egyptians. The Pharonic papyrus says that they used to worship the Nile and that the gods would judge them if anyone contaminated the Nile's waters. The ancient Egyptian used to stand before the gods and say "I swear that I have not polluted the Nile." Do we still have that reverence for the Nile today!?

9945
CSO: 5000/5015

ALEXANDRIA WATER, AIR POLLUTION PROBLEMS SAID TO BE INTENSIFYING

Cairo UKTUBUR in Arabic No 1402, 30 May 82 pp 26-27

[Article by 'Ali 'Isa: "Pollution in Alexandria: Serious Issue"]

[Text] Air pollution has become more dangerous for the inhabitants of Alexandria and Cairo. The Scientific Research Academy had set up 13 electronic stations to measure air pollution trends atop high buildings from Abu Qir to al-Maks. But the project came to a halt when Alexandria Governorate stopped financing it. Drinking water has become polluted as a result of the pollution of the water sources: Al-Muntazah Canal and others.

Al-Mahmudiyah Canal has become completely polluted as a result of the industrial waste, sewage and dead animals dumped into it. The canal is located within the city of Alexandria. Its pollution has intensified because the industrial companies dump their waste in it without subjecting these pollutants to any treatment. This dumping is taking place because of the officials' negligence and the absence of any deterrent implementation of the laws, all of which has encouraged the private sector companies, as well as the public sector companies, to continue to dump their wastes in the canal.

Abu Qir Bar, which until the recent past was called the Blue Bay, has taken the color of dark brown mud because the public sector companies in al-Tabiyah and Kafr al-Dawwar dump their chemical wastes in it. The Bay pollution has reached such a high rate that all marine life in it has died. This has caused us to lose an abundant fish resource and has caused the fishermen to migrate to Damietta and to West Alexandria--to Sidi Barrani and al-Anfushi--to find a source of livelihood. All the agricultural drainage canals have also become polluted as a result of the chemicals used in soil fertilization.

Ahmad al-Faqi, chairman of the Alexandria Water Resources Authority, said:

"Maryut Lake is completely polluted. This has affected the lake's fish resources. The danger is evident to the young fishes introduced into the lake for breeding. These fishes either die or flee the lake. The danger is not confined to fish but extends to man, considering that some companies dump into the lake wastes containing heavy minerals, such as mercury and lead, which are injested by the lake's fish that retain these minerals in their tissues and then transmit them to man when they are eaten. Moreover, the paper companies in al-Tabiyah dump caustic soda into the sea water in Abu Qir Bay. This is in addition to the sewage dumped into the Bay. This sewage also reduces the fish resources. The Sanitary Sewerage Authority has conducted a study on transporting human waste to the desert southwest of al-Nubariyah for the purpose of reclaiming desert lands. This process, though very costly, is better than dumping this waste into the sea, even if it is dumped at a distance of 3 kilometers from the coast because the movement of sea currents carries this waste back to the shoreline. This [transporting of waste to the desert] is what is happening in the Greater Cairo from which waste is transported to al-Jabal al-Asfar.

"It is necessary to refrain from polluting or damaging every source of food for man. The Mediterranean Sea already contains some salts, such as phosphate, which affect fish production in this sea. This is why our fish production has declined. Even though Egypt has the best temperature in the world [insofar as fish breeding is concerned], it has no environmental zone containing fish food, especially since the Mediterranean's deep water is not recycled. Only this sea's surface water is recycled and this affects the water currents of the fish environment. The Mediterranean countries must cooperate to enhance their fish wealth and must impose deterrent penalties on boats that dump their waste in ports.

"The companies employ no real treatment procedures before dumping their waste. It is necessary to devote attention to Egypt's water resources because they are an important source of food. The sea yields 15 percent [of the fish production] whereas Maryut Lake and the internal canals yield 80 percent of our production. Alexandria Governorate has allocated 100,000 pounds to reduce the pollution in Maryut Lake and to create new outlets for it. But what is the use of this step if the companies continue to dump their wastes which cause the pollution? Al-Nasr Oil Companies have expropriated 3,000 feddans [of the lake] to dump their oil wastes into them. The cooling pumps of these companies siphon water from the canal and then dump this water into the lake, filled with oil pollutants. The Water Resources Authority has asked the companies to build a closed circuit, but to no avail."

Ahmad al-Faqi also said: "Alexandria Governorate is responsible for the pollution of Maryut Lake and for the encroachments against the water bodies. We have the material evidence for this responsibility. The governorate and its agencies licensed a chemicals company [to operate] recently even though the Water Resources Authority had rejected the company's request. What is worse, this company sent a letter to the Water Resources Authority on 14 November 1980 stating that its wastes are not (harmful). But this company's wastes have proven harmful to the fish farm extending from kilometer 21 to kilometer 34, as proven by the analytical report of the company itself."

The decision to set up the Public Water Resources Authority is a wise decision because this authority becomes the agency responsible for all the water bodies from Aswan to Alexandria. It thus becomes possible to determine the responsibility instead of allowing it to be indeterminate. Alexandria Governorate formed 4 years ago a committee for protection of the environment comprised of professors of health engineering, of the Higher Public Health Institute, of sanitary sewerage and of water resources. But this committee has not submitted its proposals to the companies. Assuming that the committee did submit its proposals, then the companies--which compete in dumping more and more of their wastes into the sea and into Maryut Lake--would have ignored them.

The Higher Health Institute in Alexandria has conducted analyses on all the swimming beaches from Mustafa Pasha to al-Muntazah and has found in them but a small percentage of liquid pollutants, except for Sporting Beach where solid wastes abound as a result of the garbage and wastes dumped by the clubs and casinoes all along the beach. The researchers have also found that untrained sanitation workers who do not know how to clean swimming pools are in charge of cleaning the Sporting Club swimming pool.

The Higher Health Institute has also conducted a study on water reservoirs installed atop buildings and it has become evident that these reservoirs are used as children's swimming pools after the children play their soccer games. This causes the drinking water to be polluted and requires that special attention be paid to water reservoirs installed atop buildings.

Alexandria also suffers from the pollution of its water sources, namely al-Mahmudiyah and al-Muntazah canals and the canal set aside for drinking water near Muharram Bay. Numerous encroachments are committed against the banks of these canals and garbage and liquid industrial wastes are dumped into them. This is in addition to the numerous dead animals which are also dumped into these canals. This has caused the quality of the water to deteriorate. There is also the seepage of oil and lubricants from the boats and barges which cross these canals and this seepage causes aquatic life in them to die. Pollution law No 93 of 1962 on the protection of water bodies states that no wastes may be dumped into these canals. But the penalties in this law are not at all deterrent, considering that they are embodied in a 50-pound fine. It is necessary to amend this law.

Ahmad Shuhayb, the Alexandria Water Utility chairman, said: "The utility suffers from the onslaught of water moss on the filters which are blocked by the moss. This moss is a sticky gelatinous substance. According to laboratory analyses, the rate of moss content has reached one million particles in every liter of water. The moss causes a part of the utility's production to be lost in washing the blocked filters and generates an unpleasant smell in the water."

Engineer Hasan Shams, a WHO expert in Alexandria, said: "The U.S. Technical Bureau in cooperation with the Alexandria Sewerage Authority, has reached a system whereby sewage is disposed of into the sea, but according to a precise design which allows the sewage to be dumped at a distance of 2 kilometers [from the coastline] after studying the sea currents so that these currents may not carry the sewage back to the coast. The system also allows the sewage to be carried by large-diameter pipeline to be used, after being treated, in irrigating certain crops in the desert."

Dr Samiyah Jalal, a professor at the Higher Public Health Institute in Alexandria, supports the idea of dumping sewage into the desert to reclaim desert lands instead of dumping it in the sea. She supports this idea as a means to protect the coastline from pollution and to uphold our commitments to international treaties.

Dr Samiyah has added that the long-range effect of water pollution has been the increase of intestinal infections among children, especially during the summer when the water smell becomes unbearable. This also affects tourism in Alexandria. Moreover, when the Nile weeds multiply, the Ministry of Irrigation uses chemical killers to get rid of these weeds. The effect of these chemicals on the soil and the crops becomes evident afterwards, even though the firms producing these chemicals claim that they do not affect crops. The truth is that the effect of these chemicals on human beings and on plants varies. It is an accumulative long-range effect and the Ministry of Agriculture should use dredgers and dredging forks to remove the Nile weeds, thus saving the state treasury the burden of having to purchase the chemicals. It is also necessary to amend the sewerage law which permits the dumping of industrial and human wastes in canals and drainage ditches. Deterrent penalties must be imposed on companies which engage in such dumping repeatedly because the canals are the source of drinking water.

The Public Health Institute conducted studies on all the methods of treating industrial wastes and has reached the conclusion that most industrial wastes can be treated easily.

Alexandria's air pollution problem has also intensified because 40 percent of Egypt's industry is centered in Alexandria. Dr Ahmad 'Isa, an instructor at the Higher Health Institute in Alexandria, has gotten his Ph.D for his study on the effect of some air pollutants on the rate of the spread of chronic chest diseases among students and housewives living in Alexandria's economy housing. The study consists of two parts: an environmental study whereby 16 stations were set up to monitor air pollutants in various parts of Alexandria. Air samples were taken every 24 hours over a period of 2 years to study the dust content in the air and its components--sulfur nitrates and nitrogen dioxide--to calculate the individual concentrations of each of these elements in the air.

A medical study whereby 10,649 persons representing a random sample of Alexandria's residents, including 5,548 students and 5,101 housewives frequenting the various health clinics in the city to faccinate their children, were examined medically. A statistical analysis was made on all the date gathered by the researcher at the laboratories of the computer unit of the North Carolina Environmental Protection Agency in the United States. The researcher reached the conclusion that the concentration of dust suspended in the air in the eastern residential areas is lower than in the central industrial, commercial and residential areas where the concentration is higher than the limit acceptable internationally, namely 60 micrograms per cubic meter.

School children are quickly affected by any pollutants whereas housewives develop some immunity as a result of constant exposure. But housewives may develop more serious diseases than school students. Dr Muhammad al-Dakhakhini, the professor of air pollution at the Higher Health Institute in Alexandria, said: "Scientifically, no factory should be built at a distance of less than

"1 kilometer from residential areas, with the distance depending on the type of the factory."

The new al-Dakhilah factory is close to the Chlorine (Chemicals) Factory. Chlorine is a poisonous gas and has numerous harmful effects. It thus further complicates the problem because it will pollute al-'Ajami area which is a unique summer resort. The red iron dust will also fly with the wind and land on the saltworks, turning the color of the salt red [as published]. The factory will also affect the governorate's utilities because it will exert further pressure on them. It is necessary that any plant be set up on the site proposed for it in al-'Amiriyah area by the economic feasibility study committee and that al-Dakhilah area be set aside as a residential-tourist complex by virtue of its unique location on the sea.

We cannot but laud the efforts of the scientists of the Higher Public Health Institute in Alexandria for their field studies to deal with the problems of air, coastal and drinking water pollution in and outside of Alexandria. These scientists have reached practical solutions founded on objective bases. We also cannot but laud Dr Muhammad al-Dakhakhini, the head of the air pollution section, for his foresignt and his purchase of an electronic apparatus to measure nuclear radiation not only in Alexandria but in Egypt generally. This precise apparatus can foretell the emergence of nuclear dangers in case nuclear reactors are built in Sidi Karir or al-Dab'ah. The apparatus measures radiation 24 hours a day even beyond Egypt's borders and in the neighboring countries. Should abnormal nuclear activity occur in a neighboring country, this apparatus can sense and measure it.

Now, should we hope that Alexandria Governorate and the other governorates will take advantage of the research and studies of the Higher Public Health Institute or will these scientific studies remain locked in bureaucratic drawers and will the agencies in charge remain in one valley and these scientific studies in another valley, considering that the dangers of pollution are intensifying daily in Egypt and that it is necessary to deal with the pollution problems and to avert their dangers before they accumulate in a fearful manner?

8494
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BRIEFS

PAPER INDUSTRY POLLUTION RESEARCH--Researchers for the Public Company for Paper (Rakta) have solved the problem of the black liquid which threatens the Gulf of Abu Qir with pollution. They were able to recover the constituents of the black liquid, including very expensive caustic soda. They re-used it in again cooking rice straw, which saves the company 4 million pounds annually. Eng Fu'ad Abu Zaghlah, minister of industry, said that he has registered this method in the Patent Office and has marketed it throughout the world because the danger of the black liquid to the environment has led to a halt in the use of rice straw in extracting paper pulp in many world paper factories. [Text] [Cairo AL-JUMHURIYAH in Arabic 25 Jun 82 p 1]

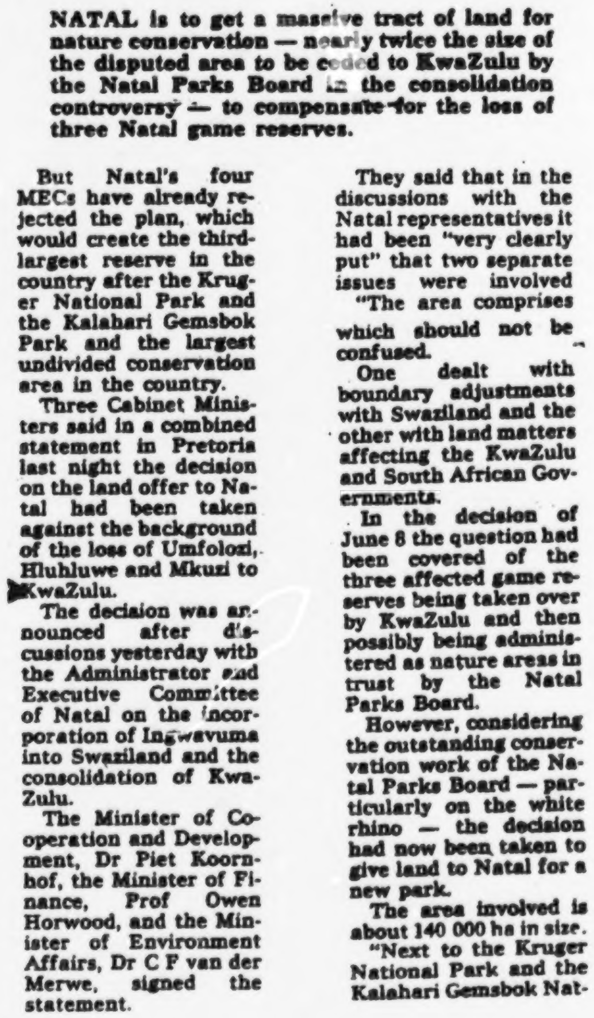
CSO: 5000/5020

NATAL TO GET LAND FOR NATURE CONSERVATION

Johannesburg THE CITIZEN in English 26 Jun 82 pp 1, 2

[Article by Keith Abendroth and Jaap Theron]

[Text]



NATAL is to get a massive tract of land for nature conservation — nearly twice the size of the disputed area to be ceded to KwaZulu by the Natal Parks Board in the consolidation controversy — to compensate for the loss of three Natal game reserves.

But Natal's four MECs have already rejected the plan, which would create the third-largest reserve in the country after the Kruger National Park and the Kalahari Gemsbok Park and the largest undivided conservation area in the country.

Three Cabinet Ministers said in a combined statement in Pretoria last night the decision on the land offer to Natal had been taken against the background of the loss of Umfolozi, Hluhluwe and Mkuzi to KwaZulu.

The decision was announced after discussions yesterday with the Administrator and Executive Committee of Natal on the incorporation of Ingwavuma into Swaziland and the consolidation of KwaZulu.

The Minister of Cooperation and Development, Dr Piet Koornhof, the Minister of Finance, Prof Owen Horwood, and the Minister of Environment Affairs, Dr C F van der Merwe, signed the statement.

They said that in the discussions with the Natal representatives it had been "very clearly put" that two separate issues were involved "The area comprises which should not be confused.

One dealt with boundary adjustments with Swaziland and the other with land matters affecting the KwaZulu and South African Governments.

In the decision of June 8 the question had been covered of the three affected game reserves being taken over by KwaZulu and then possibly being administered as nature areas in trust by the Natal Parks Board.

However, considering the outstanding conservation work of the Natal Parks Board — particularly on the white rhino — the decision had now been taken to give land to Natal for a new park.

The area involved is about 140 000 ha in size.

"Next to the Kruger National Park and the Kalahari Gemsbok National Park, this will be the largest undivided, multi-purpose conservation area in the country," the statement said.

The area includes the entire St Lucia Lake and surrounding area in part of the Mkuzi reserve and the area around Bangazi Lake.

a large variety of habitats and eco-systems and, apart from its own distinctive fauna and flora, it will be exceptionally suitable for the resettlement of various game species," the statement said.

Natal's four NRP MECs indicated after yesterdays meeting they did not accept the Government's opinion on the matter.

Mr Frank Martin, the senior MEC, said his executive was continuing with its special session of the Natal Provincial Council next Wednesday at which a referendum on the land deal would be debated.

He was not prepared to reveal any part of yesterday's discussions.

Mr Ray Haslam, MEC, said the Natal executive did not accept the joint statement by the three Cabinet Ministers.

Dr Piet Koornhof told reporters afterwards the three Ministers stuck to the Prime Minister's standpoint that Natal did not have the jurisdiction to hold a referendum on the issue.

Asked about the Government's attitude on a referendum, Dr Koornhof said it was considered at the time, but because of certain intimidatory factors it was decided to use different methods of ascertaining the opinion of the people involved.

He said the Government's information was that intimidation would have affected a referendum.

It was also announced yesterday that more areas in the Natal Drakensburg would be placed under the Natal Parks Board's control.

"By placing these areas under the control of the Natal Parks Board, it will be ensured that the board will, in due course, exercise control over areas in the northern, central and southern Drakensberg, comprising a variety of ecological areas.

"Some of the land is still in private ownership but will in due course be purchased by the State and made available to the Natal Parks Board for nature conservation and related purposes," the statement said.

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END

JPRS 81569

18 August 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 364

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SMELTER IMPLICATED IN HIGH LEAD LEVELS FOUND IN CHILDREN

Sydney THE SYDNEY MORNING HERALD in English 16 Jun 82 p 1

[Text]

PORT PIRIE. — Fifty-seven of a group of 87 children tested for blood lead levels in Port Pirie were found to be over the level of concern of 30 micrograms per 100 millilitres set by the National Health and Medical Research Council.

The 87 children were subjected to more extensive tests after blood lead tests of 1,300 children in Port Pirie West and Solomontown in May found they were over the level of concern.

The Mayor of Port Pirie, Mr Bill Jones, announced the results of the tests yesterday.

Mr Jones is also the chairman of the local Board of Health and the corporate affairs manager of Broken Hill Associated Smelters, which operates the world's biggest lead smelter in the city.

The tests were carried out by the company's laboratory because the South Australian health authorities believed it was the only one available with the expertise to do the job properly.

Mr Jones denied suggestions yesterday that the smelter's involvement in conducting the tests had damaged the survey's credibility or that the positions he held created a conflict of interest.

"Every effort is being made to overcome the problem created by the lead levels and I stress there is no need for alarm among the parents of the children involved," he said.

When Mr Jones earlier announced that the children would be recalled for further testing he assured parents the highest level found among the tested children was 54 micrograms.

He said hospital treatment was not required until a level of 60 micrograms was reached.

The manager of Broken Hill Associated Smelters, Mr Denby Ward, said the company would not enter into negotiations over compensation with parents whose families had been affected by lead.

He said he was not officially aware of such families and any who did exist would have to take legal action if they wanted compensation.

An indemnity clause in the testing consent forms which had been criticised by parents protected the company only from action arising out of the testing procedure and not civil action over alleged lead poisoning.

No such civil action had been entered, Mr Ward said.

Asked whether the company should pay expenses incurred by families who had left the town, or run up large medical or renovation bills because of lead, Mr Ward said he believed the company already had paid.

"We've spent 38 million dollars over the past ten years trying to lower lead emissions — the problem is not new emissions but old lead deposits being dug up," he said.

Of the 57 children identified, 37 were in the 30-35mg range, 13 in the 35.5-40mg range, six in the 40.5 to 45 range, none between 45.5 and 50 and one above 50mg per 100ml of blood.

Parents later vehemently criticised the program

One parent, Mrs Debbie Devlin, said the smelter's involvement in taking and analysing the initial tests had made a farce of the survey.

Academics in the United Kingdom have described the 30mg safety mark as "ridiculously high," and contend that 15mg is a more realistic level.

CSO: 5000/7556

STUDY FINDS SYDNEY RAIN AS ACIDIC AS LEMON JUICE

Sydney THE SYDNEY MORNING HERALD in English 12 Jun 82 p 3

[Article by Richard Eckersley]

[Text]

It rains acid in Sydney in summer, a CSIRO study has found. One rainfall sample collected was as acidic as lemon juice.

Acid rain is caused by the presence of mainly sulphuric and nitric acids produced by emissions of sulphur dioxide from power stations and industries, and nitrogen oxides from vehicle exhausts.

It is causing growing concern in Europe and North America where it has been linked to the disappearance of fish in lakes, the destruction of large areas of forests, and the leaching of toxic heavy metals such as cadmium into ground water.

However, there has been hardly any interest in acid rain in Australia because it was generally considered that urban and industrial areas were too dispersed to pose problems.

Dir Greg Ayers and Mr Rob Gillett, of the CSIRO Division of Cloud Physics, who carried out the Sydney research were surprised at the degree of acidity found. The environmental consequences remain unclear.

Mr Gillett said yesterday that much the same level of acidity was found as far west as the Blue Mountains.

In their study, the researchers monitored rainfall in the summer of 1980-81 at 12 sites in or near Sydney, collecting 294 samples.

The collection sites were Annandale, Five Dock, Greenacre, Loftus, Brookvale, Epping, Berowra Heights, Hornsby Heights, Carlingford, Castle Hill, Springwood and Warrimoo.

The most acidic rain was recorded at Epping (average pH 4.25) and the least at Loftus (pH 5.08).

The mean pH — a measure of acidity — was 4.44. The lowest pH recorded was 3.6 about as acidic as lemon juice.

Pure water has a pH of 7. Pure water in contact with atmospheric carbon dioxide has a pH of about 5.6.

The study found 93 per cent of the rainwater collected had a pH below 5.6, and could thus be labelled acid rain, the researchers say.

Less extensive sampling showed a slightly higher pH in the summer of 1981-82. pH increased in autumn and spring and fell again in winter, although not as far as in summer.

Mr Gillett said the acid rain could increase corrosion of paint or masonry.

He thought it was unlikely that the rain would affect fish and vegetation in the Sydney region. It was less acidic than in the worst affected areas of the northern hemisphere and would, in any case, be neutralised by Sydney's alkaline soils.

However, it was possible acid rain could be a factor in the still unexplained disease of eucalyptus called die-back in the New England region, he said.

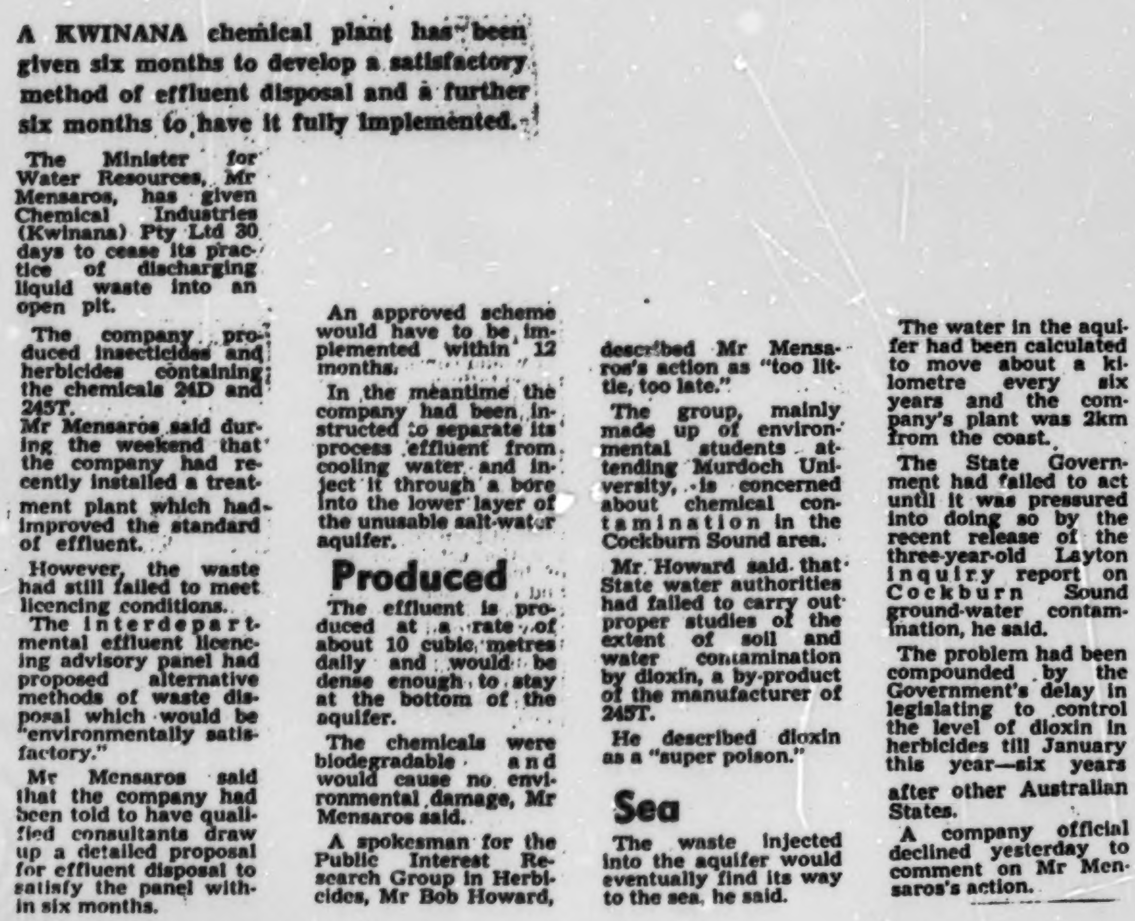
Soils there were acidic, and this would be increased by acid rain, Mr Gillett said. The

CSO: 5000/7556

CHEMICAL PLANT GIVEN TIME TO CONTROL EFFLUENT DISCHARGE

Perth THE WEST AUSTRALIAN in English 14 Jun 82 p 3

[Text]



A KWINANA chemical plant has been given six months to develop a satisfactory method of effluent disposal and a further six months to have it fully implemented.

The Minister for Water Resources, Mr Mensaros, has given Chemical Industries (Kwinana) Pty Ltd 30 days to cease its practice of discharging liquid waste into an open pit.

The company produced insecticides and herbicides containing the chemicals 24D and 245T.

Mr Mensaros said during the weekend that the company had recently installed a treatment plant which had improved the standard of effluent.

However, the waste had still failed to meet licencing conditions.

The interdepartmental effluent licencing advisory panel had proposed alternative methods of waste disposal which would be "environmentally satisfactory."

Mr Mensaros said that the company had been told to have qualified consultants draw up a detailed proposal for effluent disposal to satisfy the panel within six months.

An approved scheme would have to be implemented within 12 months.

In the meantime the company had been instructed to separate its process effluent from cooling water and inject it through a bore into the lower layer of the unusable salt-water aquifer.

Produced

The effluent is produced at a rate of about 10 cubic metres daily and would be dense enough to stay at the bottom of the aquifer.

The chemicals were biodegradable and would cause no environmental damage, Mr Mensaros said.

A spokesman for the Public Interest Research Group in Herbicides, Mr Bob Howard, described Mr Mensaros's action as "too little, too late."

The group, mainly made up of environmental students attending Murdoch University, is concerned about chemical contamination in the Cockburn Sound area.

Mr Howard said that State water authorities had failed to carry out proper studies of the extent of soil and water contamination by dioxin, a by-product of the manufacturer of 245T.

He described dioxin as a "super poison."

Sea

The waste injected into the aquifer would eventually find its way to the sea, he said.

The water in the aquifer had been calculated to move about a kilometre every six years and the company's plant was 2km from the coast.

The State Government had failed to act until it was pressured into doing so by the recent release of the three-year-old Layton inquiry report on Cockburn Sound ground-water contamination, he said.

The problem had been compounded by the Government's delay in legislating to control the level of dioxin in herbicides till January this year—six years after other Australian States.

A company official declined yesterday to comment on Mr Mensaros's action.

CSO: 5000/7556

VICTORIAN GOVERNMENT IN ROW OVER EXTENSION OF POLLUTION NOD

Melbourne THE AGE in English 17 Jun 82 p 5

[Text]

The Victorian Government will allow the SEC's Hazelwood power station to emit higher pollution levels for another four months in an attempt to ensure uninterrupted winter power supplies.

The special licence conditions, which will operate until 31 October, will allow increased emission of solid particles from the plant's coal-fired chimneys.

The Minister for Minerals and Energy, Mr White, and the Minister for Conservation, Mr Walker, issued a joint statement yesterday approving the extended licence subject to several controls. These include submission of detailed plans to rebuild pollution control equipment at Hazelwood and an early application by the SEC for its Loy Yang licence.

The SEC chairman, Mr Trethowan, has said previously that, pending Government approval of the extended emissions licence, the SEC will formally apply to the Environment Protection Authority for a further two-year relaxation of licence conditions.

Mr White and Mr Walker said yesterday that an application for a two-year extension of the special licence variation would be heard publicly under normal EPA appeals procedures.

The Government claims the 31 October extension of the licence variation is necessary to maintain uninterrupted power supplies during winter.

Emission limits were relaxed at Hazelwood earlier this year to enable the SEC to help meet an urgent demand for electricity supplies in New South Wales.

A member of Morwell Council, Councillor Keith Hamilton, said yesterday the Government had given no real reasons for its approval of the eased emission licence.

cil, councillor Keith Hamilton. "The people of the Latrobe Valley are bitterly disappointed that a Labor Government would do this to them. This has always been a strong Labor area, and in that light, the Government's decision to allow further pollution by the SEC is totally unacceptable," he said.

Councillor Hamilton, a senior lecturer in applied science at the Gippsland Institute of Advanced Education, said pollution from SEC chimney stacks had caused severe health problems, including eye and lung irritations, among Latrobe Valley residents.

Under the eased emission conditions, dust concentration limits from individual chimneys have been increased from 0.5 to 0.6 grams per cubic metre. However, although the licence permits higher individual emissions, the total mass emission from the station will not change.

The acting chairman of the EPA, Mr John Alder, said the authority had approved the extended licence subject to a programme of pollution abatement works at the station. This involved the rebuilding and refurbishing of precipitators on eight power generating units, he said.

Mr Alder said the SEC had lodged an application with the Latrobe Valley Water and Sewerage Board for an amendment to its licence, seeking higher levels of emission.

Hazelwood power station supplies 5 per cent of the average daily generation of Victoria's electricity.

CSO: 5000/7556

NECESSITY OF FORESTRY, OTHER PROJECTS TOLD

Dacca THE BANGLADESH TIMES in English 12 Jul 82 p 5

[Editorial]

[Text] Taking up massive afforestation and other schemes promising favourable impact on maintaining the ecological balance are a dire necessity for the northern region of the country. The area is hard hit by widespread drying up of rivers and the lowering of surface and subterranean water levels. The ecological balance of a large segment of the northern region has been at stake for a long time now due to the operation of the Farakka barrage beyond the country's borders. The large scale formation of 'char' lands has been devouring the once-mighty Padma and other rivers jeopardising the life and living of millions of people as well as navigation in the region. At certain places the rivers are becoming the memories of the past confirming the worst apprehension of experts that the whole of the northern region may turn into deserts in not too distant a future unless ecological problems are attended to immediately. The vast chars of the Padma already give looks of barren deserts and the urgency of the issue needs no highlighting.

The recent report that the government has initiated a massive afforestation plan for the northern region in this connection is refreshing. The total cost of the programme, according to the report, is Taka 30.69 crore and part of which will be given by the Asian Development Bank and the United Nations Development Programme. Under the plan fast growing trees would be planted throughout the region. In this context the forest department is also trying to organise some kind of local level initiatives to plant tree saplings on a large scale in the villages.

The programmes and initiatives taken by the government for tackling a problem of such a serious magnitude in the northern region may have their limitations because of resource constraints and other factors. Besides without full participation of the people only official plans in any case will not be sufficient to check the spread of desertification and the associated problem and sufferings of the people of the affected areas. To start with the people must be made aware of the danger they are faced with and the possible ways and means to counter it. Well-organised and motivated people can work wonders and in various other sectors our rural people have also proved that if organised properly and given the leadership they come forward with great enthusiasm. The local level initiative is also essential because of the nature of our official apparatus which can hardly reach the villages. Hence involving the people in the afforestation programme of the northern region is a good beginning the forest department has been trying to make.

CSO: 5000/7080

NATIONAL WATER DEVELOPMENT AGENCY ESTABLISHED

New Delhi PATRIOT in English 26 Jul 82 p 8

[Text] A National Water Department Agency has been set up under the chairmanship of Union Irrigation Minister Kedar Panday to undertake surveys and investigations for the development of peninsular rivers, reports UNI.

The constitution of the agency under the Societies Registration Act marks the first step towards implementing the massive Rs 50,000 crore national perspective for water resources development which envisages among other things transfer of surplus waters from one river basin to another to meet the needs of deficit areas.

Union Minister of State for Irrigation Z.R. Ansari is the vice president of the agency, while the Chief Ministers and Irrigation Ministers of Andhra Pradesh Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamilnadu, Uttar Pradesh, Kerala, Goa, Daman and Diu and Pondicherry are its members, besides concerned Central Ministers. Mr J.I. Gianchandani, former chief engineer in Rajasthan Government is the director-general of the agency. He will also act as the member-secretary.

The functions of the agency are to promote scientific development for optimum utilisation of water resources in the peninsular rivers, carry out detailed surveys and investigations of the possible storage reservoir sites and interconnecting links in close cooperation with the State governments and to prepare feasibility reports of various components of the scheme.

The investigations and planning work is expected to be completed in seven to 10 years at an estimated cost of about Rs. 107 crores.

Peninsular rivers development is part of the national perspective plan which also envisages Himalayan rivers development to be taken up later. The two components of the plan together envisage irrigation of an additional area of 25 million hectares by surface flows, 10 million hectares by increased use of ground water and generation of about 40 million KW of power besides benefits of flood control and navigation. The entire scheme will enable the ultimate irrigation potential of the country to be increased from 113 million hectares to 148 million hectares.

CSO: 5000/7081

MINISTER SPEAKS AT GANGES FLOOD CONTROL MEETING

Calcutta THE STATESMAN in English 16 Jul 82 p 16

[Text] SEVERE erosion on the right bank of the Ganga, over a stretch of 94-km downstream of Farakka has been resulting in a loss of Indian territory and a consequent gain by Bangladesh, according to Mr Ram Narayan Goswami, Minister of State for Irrigation. Between 1931 and 1978, India had lost 25,000 hectares of land to the neighbouring country because of erosion and soon after the 1978 floods, 2,400 hectares were lost, the Minister said on Thursday.

Mr Goswami, who represented the Chief Minister at a meeting of the Ganga Flood Control Commission on July 6, said that although this was the most important thing in the West Bengal agenda at the meeting, the Commission took no cognizance of the rapid erosion near Farakka. It felt that tackling the erosion was a State matter.

The Commission on the other hand suggested to the State Government that it come up with a recast project to save the vulnerable spots of the erosion. Mr Goswami said that at many points the Ganga waters had come very close to the railway tracks and the National Highway. The recast project, which will cost Rs 19 crores, includes repair work in these areas. The State Government had earlier asked for Rs 198 crores to check the erosion on the 94-km stretch on the basis of the Preetam Singh Committee report in 1960. Mr Goswami reiterated that the erosion was so severe that the Ganga was likely to meet the Feeder canal of the Bhagirathi river soon. He felt that the very purpose of the Farakka barrage would be lost if it was not checked.

The West Bengal Government's view that irregular discharge from the Farakka barrage was largely responsible for the erosion was rejected by the Commission which felt that erosion in the area had started much before the barrage was constructed. Mr Goswami said that the Ganga flowed on two channels downstream of Farakka. Irregular discharge of water from the barrage had caused silting of the left channel forcing the water in an increasing quantity through the right channel resulting in large scale erosion.

The Commission had sent its observation on the erosion to the State Government which was sent back with necessary replies, Mr Goswami added. He was assured at the meeting that the recast project would be approved. The Minister requested the chairman of the Commission to visit West Bengal by the end of July to see the erosion for himself.

PTI adds from Gauhati: Nearly 300 families at Paranganla and Joganiar villages in Golaghat subdivision are threatened by the severe erosion of the Brahmaputra at Mariahola even as the water level has been receding during the past few days.

According to official reports, erosion continuing at an alarming rate, has also endangered an embankment. Elsewhere in the Kownarpur area of Sibsagar sub-division, erosion by Dikhow river continues unabated.

An official Press Note, however, said here that no alarming report on the flood situation was received from any sub-division today.

The Central Flood Forecasting Division here said the Brahmaputra, still flowing above the danger level at Dibrugarh, might rise between Gauhati and Dhubri during the next 12 hours. Among its other tributaries, the Subansiri is flowing above danger level at Bandatighat steadily.

CSO: 5000/7078

INDIA

BRIEFS

SOIL CONSERVATION PLANS--A RS. 2.8-crore pilot project for soil conservation in the catchment areas of the Keleghal and Mayurakshi rivers has been prepared. It will be implemented with assistance from the European Economic Community. The catchment areas of both rivers are located in the undulating lateritic tract of Midnapore and Birbhum districts. The ecological balance has been threatened, particularly in the upper catchment region where extensive denudation, heavy incidence of cattle grazing and improper land use have assumed alarming proportions, according to informed sources. Severe erosion, the siltaton to rivers and frequent floods have become regular features in these areas. The project proposes to introduce intensive soil conservation measures, including ground water recharging, contour trenching and afforestation. The main objective of the project is to rehabilitate these two important river catchments in the shortest possible time. According to the sources, about 1.7 million hectares are now exposed to land degradation. Soil erosion, to a large extent, is due to the pressure of the population on the land. This has been further aggravated by uncontrolled fire in the forest and unauthorized and unregulated felling of trees. [Text] [Calcutta THE STATESMAN in English 17 Jul 82 p 12]

CSO: 5000/7079

ENVIRONMENTALISTS OPPOSE AMOCO PROSPECTING LICENSES

Planning Tribunal Hearing

Auckland THE NEW ZEALAND HERALD in English 1 Jul 82 p 2

[Text]

A test hearing of mineral-prospecting licence applications opened before the Planning Tribunal in Thames yesterday with a renewed challenge to the admissibility of evidence relating to mining operations.

Amoco Minerals (NZ) Ltd has applied for two prospecting licences over coastal blocks near the Coromandel beach resorts of Whangamata and Pauanui.

The hearing is being closely monitored by both the mining industry and the environmental lobby, because the applications are the first to be dealt with under recently amended mining legislation.

Opposition, led by the Environmental Defence Society, is mainly focused on prospecting plans for 1090 hectares at Opoutere. The plans have attracted more than 50 objections.

Head Off

Only two formal objections were lodged against the second application, for 1130 hectares at Onemana.

The counsel for Amoco, Mr G. P. Curry, opened the company's case by trying to head off any evidence about the likely impact of mining operations.

He said that because the Mining Amendment Act 1931 had removed the automatic right of a prospector to exchange a prospecting right for a mining licence, a decision of the High Court last year on the admissibility of evidence of mining impact no longer applied.

"Any evidence of mining operations at this stage would be highly speculative, since it is impossible to predict the nature and scope of any mining operations," Mr Curry said.

But with objectors' evidence yet to be heard, the chairman of the Planning Tribunal, Judge A. R. Turner, declined an application to rule on the matter.

Under the new legislation, it is up to the tribunal to propose to the Minister of Energy what conditions should be attached to prospecting licences.

Amoco and the Hauraki Catchment Board submitted their own proposed conditions, but Judge Turner told their representatives to work out the points of conflict with the Crown Law Office and report back to the tribunal tomorrow.

The company has not applied for a water right because it says it is pioneering a new drilling technique which does not require water.

But the catchment board said it would still need to inspect prospecting operations and asked that mining companies be required to foot the bill.

The New Zealand director of Amoco, Mr Peter Roberts, said his company was planning limited-impact prospecting which would be followed by full environmental restoration.

Coastal Strip

Later, during cross-examination by the Environmental Defence Society counsel, Miss Sian Elias, he said the company would not be prepared to exclude a coastal strip and headlands from the Opoutere application.

He said Amoco had no plans to drill on the beach, but any policy of "locking up" zones under a resource management plan would be "fraught with danger" because of the unknown value of possible mineral deposits.

Among witnesses due to appear today is the Commissioner for the Environment, Mr K. W. Piddington, who has been subpoenaed by the Environmental Defence Society.

Regional Resources Study

Auckland THE NEW ZEALAND HERALD in English 2 Jul 82 p 2

[Excerpts]

Thames

Calls for an urgent regional resources study to pinpoint mining exclusion zones for the Coromandel Peninsula came from several quarters at a Planning Tribunal hearing in Thames yesterday.

But they encountered a sceptical response from the tribunal chairman, Judge A. R. Turner, who said local residents had only themselves to blame for the lack of such a study.

"The problem is the community seems very reluctant to set up an organisational structure to do this," he said in an apparent reference to delays in setting up a Thames Valley United Council.

"In the absence of such a study, this tribunal has to stumble along and do the best it can."

Among advocates of a regional resources study yesterday was the Commissioner for the Environment, Mr K. W. Piddington, who had been subpoenaed to appear by the Environmental Defence Society.

Mr Piddington said the Coromandel Peninsula was a region of ecological importance and physical instability.

He said a study of the peninsula's natural resources would allow identification of areas where mining would be harmful and conversely where it would be manageable.

Amoco says it plans to carry out limited impact prospecting only.

But the commissioner said he was concerned that with a large concentration of mining privileges in the Coromandel, there could be cumulative effects unforseen by a consideration of each application in isolation.

The general manager of the Thames Coromandel District Council, Mr B. H. de Boer, said that although his council was not opposed to mining as such, there was an urgent need to pinpoint areas where it should not be allowed.

Miss Sian Elias, counsel for the Environmental Defence Society, which is acting for most of the objectors, submitted that the tribunal's inquiry should not be limited to the impact of a prospecting licence.

The new legislation allowed it to have regard to the mining that might be the end result, she said.

Her submission follows a move by Amoco at the start of the hearing to have all evidence relating to mining operations declared inadmissable.

Judge Turner has so far resisted making a ruling saying: "We will deal with that problem when we come to it."

Water, Soil Impacts

Auckland THE NEW ZEALAND HERALD in English 3 Jul 82 p 2

[Text]

A legal tussle, over whether catchment authorities or the mines division should have policing powers under new mining legislation, marked the conclusion of a three-day Planning Tribunal sitting in Thames yesterday.

The Hauraki Catchment Board — backed by the Environmental Defence Society and the Thames-Coromandel District Council — argued that it should be the agency to administer proposed prospecting-licence conditions relating to water and soil impacts.

But Amoco Minerals (NZ) Ltd, whose prospecting-licence applications for blocks at Opoutere and Onemana on the east coast of the Coromandel Peninsula were the first to be heard under the Mining Amendment Act 1981, maintained the Inspector of Mines was the appropriate officer for the job.

Limited Impact

The company's position on this was supported yesterday by counsel for the Minister of Energy, Mr Birch, who had referred Amoco's applications to the Planning Tribunal in the first place.

It is now up to the tribunal, having heard evidence on behalf of Amoco and of 48 objectors, to report to the minister on whether or not the applications should be granted and, if so, what conditions should be attached.

The company, which proposed confining itself to "limited-impact" prospecting on the two blocks, prescribed its own conditions which were matched by another set, jointly worked out by the Environmental Defence Society, acting for most of the objectors, the catchment board and the district council.

Vexed Question

The two sets of conditions struck common ground on many points such as wildlife-protection measures and limitations on the number and size of drilling sites.

But the matter of the catchment board's involvement became a vexed question.

The board's counsel, Mr P. H. Cooney, said mining activities affected water and soil values in many ways which, unless they involved the actual taking or discharging of natural waters, fell outside the scope of the Water and Soil Conservation Act.

Only Agency

Examples would be the build-up of stream sludge and erosion caused by track construction, he said.

Mr Cooney submitted that the board, because of its expertise in the field, should be the only agency to control water and soil-related conditions.

But Amoco's leading counsel, Mr G. P. Curry, said prospecting licences were granted under mining legislation which gave the Inspector of Mines all the powers reasonably necessary to put its provision into effect.

CSO: 5000/9073

MORATORIUM BARS EXPLOITATION OF 11 GEOTHERMAL FIELDS

Temporary Protection Given

Auckland THE NEW ZEALAND HERALD in English 30 Jun 82 p 3

[Text]

Eleven North Island geothermal fields have been granted temporary protection against exploitation under a moratorium announced yesterday by the Minister of Energy, Mr Birch.

Mr Birch said that drilling only for monitoring purposes would be allowed in the fields until a Government study on the use of geothermal resources was finished.

The moratorium would apply to the Waimangu, Ketetahi, White Island, Waiotapu, Orakei Korako, Tikitere, Te Kopia, Paukohurea, Waikite, Tokaanu-Waihi-Hipaua and Reporoa fields.

All the fields except Reporoa were on a Nature Conservation Council list of fields worth preserving because of their unusual characteristics or scientific value, Mr Birch said.

Paper

Reporoa had been included, he said, because it was thought to be connected to a number of other fields.

Mr Birch said the recently-formed Geothermal Co-ordinating Committee was preparing a paper entitled "Geothermal Resources in New Zealand." It would form the basis for policy decisions on the future use of the resource.

The minister said he would write to the Rotorua District Council, asking it to institute a similar policy for its own part of the geothermal field.

Questions

The Broadlands, or Ohaki, geothermal field near Taupo is apparently not covered by the moratorium, although it could be some time before the field is developed as the basis of the country's second geothermal power station.

Negotiations between the Government and the Maori owners of the field have not yet resolved the land tenure questions relating to the development.

The director of the Maori Arts and Crafts Institute (which administers the Whakarewarewa thermal reserve), Mr Stuart Harris, said last night that he was "absolutely delighted" that the Government was at last taking he issue seriously.

"Even though moratoriums do not mean a total ban, at least there is a pause period for greater knowledge to be discovered before geothermal fields die," Mr Harris said.

National Authority Sought

Auckland THE NEW ZEALAND HERALD in English 1 Jul 82 p 8

[Text]

The chairman of the Maori Arts and Crafts Institute, Dr Peter Tapsell, believes a national energy authority should be set up to control the entire Rotorua geothermal field.

"Recent events have shown that local authorities are too subject to local political pressures and utterly unsuited to controlling an important national resource such as geothermal energy," Dr Tapsell said yesterday.

It was equally clear that the present situation, whereby the Rotorua District Council was responsible for part of the field and the Ministry of Energy for the rest, was quite hopeless.

'Greedy People'

Dr Tapsell, who is Labour MP for Eastern Maori, believed that only a body such as a national energy authority would be strong enough to "resist a few influential but greedy people" and ensure that geothermal energy was not wasted and was used in such a way as to protect geysers at the Whakarewarewa Thermal Reserve.

His comments followed an announcement by the Minister of Energy, Mr Birch, that 11 North Island geothermal fields had been granted temporary protection against exploitation under a moratorium.

The Rotorua field was not included in the 11 but Mr Birch said he would write to the district council and ask it to institute similar policy.

Dr Tapsell said the minister's announcement was a small step in the right direction.

"But he appears to have dodged taking any action to protect Whakarewarewa."

Action Urgent

"The Whaka field is far and away the most important from the point of view of tourism and the environment. It is here that action is most urgent and necessary."

Part of the Whaka reserve comes under the Rotorua geothermal field (the Rotorua city area prior to amalgamation in 1979).

Dr Tapsell believed that the moratorium should extend to the drilling of both new and repluacement geothermal bores.

It is understood that the minister has exempted replacement bores from the moratorium.

Meanwhile, the Press Association report that the Nature Conservation Council has welcomed the moratorium on geothermal drilling.

The council chairman, Dr Carolyn Burns, said she was pleased the council's recommendations had been adopted by the Government.

The moratorium was "especially welcome in view of the past alarming rate at which geysers had disappeared through development."

CSO: 5000/9073

CEMENT PLANT ORDERED CLOSED FOR POLLUTION

Manila BULLETIN TODAY in English 28 Jul 82 p 32

[Text] The Rizal court of first instance has ordered a cement company to close its batching plant near Don Mariano Marcos Ave., Quezon city, and pay more than ₱1 million to six residents for polluting the neighborhood with cement dust.

Ordered shut down was the plant of Daytona Construction and Development Corp. with business offices at 252 Don Mariano Ave. Its plant is on South Zuzuarregui Ave., a side road of Don Mariano Ave.

CFI Judge Eduardo C. Tutaan acted following trial on the complaint filed by former National Library Director Ernesto Rodriguez, Jr., his son Ernesto L. Rodrizuez III, Sacha del Rosario, Jose P. Genito, Zenaida Z. Rodriguez and Enecerio Mondia.

Judge Tutaan declared the cement plant operation a "nuisance" and ordered the company to pay a total of ₱1,290,000 in damages to the residents.

The court found that cement dust from the batching plant was affecting the health of the residents. "The noise, the vibration, the smoke and the odor generated by the day and night operation of the plant must indeed be causing them serious discomfort and untold miseries," the judge said.

The court assailed the mayor's office for issuing a business permit to the company to put up its cement plant in a residential area. "The obvious purpose of zoning--the protection of public health, convenience, safety and welfare--was not considered when the company was granted permit to do business in a residential area."

The judge found that Rodriguez III's residential lots consisting of 8,892 square meters have been fully covered by cement dust and all plants have died. Thus, the market and usable value of the property was greatly reduced, he said.

The elder Rodriguez submitted a medical certificate to show that he was recently taken ill with acute bronchial asthma and hypertension.

CSO: 5000/5788

SRI LANKA

BRIEFS

FLOW OF EFFLUENTS CAUSE ALARM--Environmentalists view with alarm the extremely large volume of effluents flowing into streams which eventually find their way into the Negombo Lagoon from the Ekala area. A textile processing factory is the chief offender, emptying several hundred gallons of dye, oil and chemicals. "Everything in the vicinity is dead including plants and at this time the smell is unbearable," said an environmentalist. "Last year this same place was shown to a Ministry secretary who promised to have some action taken but nothing seems to have happened yet," he added. Informed sources say that no factory can be established in India without a clearance certificate from the Department of Environment which requires an environmental impact assessment statement so that incidents of this nature are avoided. "It's high time Sri Lanka too, introduced legislation of this nature," was the consensus of the environmentalists concerned. [Text] [Colombo DAILY NEWS in English 21 Jul 82 p 1]

CSO: 5000/5788

THAILAND

ECONOMIC DEVELOPMENT HAS GREATLY HARMED ENVIRONMENT

Kuala Lumpur BUSINESS TIMES in English 24 Jun 82 p 19

[Article by Suchin Preecha in Bangkok]

[Text] LIKE all developing countries, Thailand is faced with the problem of reconciling its economic development programmes with the need to protect its environment.

Authorities admit that it's a difficult dilemma that's almost always resolved in favour of development to the detriment of the environment.

"You have to admit it," said a government official, "the economic imperatives at this stage of our development simply outweigh the dangers posed by pollution."

He added: "It's a sad commentary on a nation's struggle for survival that development often jeopardises the environment. But it's a reality and you can't ignore it."

Even diehard environmentalists admit that economic development comes first in the pollution versus economic progress issue.

However, they insist that a line has to be drawn between economic imperatives and what the nation's level of pollution the environment could take.

Dr Khasem Sanitwong Na-Ayudhaya, secretary general of the National Environmental Board (NED), lamented that the country's past development plans emphasised only economic growth without considering its impact on the environment. "We have achieved some material progress by raping nature," he said.

He said that natural resources had been rapidly exploited or destroyed by both the government and private sectors without considering their effects on the environment.

The extent of environmental destruction cannot be overemphasised. During the past two decades, for instance, Thailand's forest reserves have dwindled dangerously low.

A 1973-77 satellite photographic survey made by the Faculty of Forestry of the Agriculture University in Bangkok showed that the country's forest cover had dropped from 123 million *rais* (one acre is about 2.5 rais), or 38 per cent of Thailand's total land area to 82 million rais.

The Forestry Department reported that the rate of forest destruction was as high as 10 million rais a year. Latest statistics showed that only 20 per cent of Thailand's total land area remained forested.

Massive forest destruction has seriously affected the country's major rivers. An old Thai saying that, "There is rice in the field and fish in the river," has since been changed into "We still have rice in the field , but there are few fishes in the polluted rivers."

Thailand's rivers, which used to be the major sources of irrigation in the glory days when Thailand was one of the top rice producers in the region, are heavily polluted with toxic chemicals like pesticides.

In the urban areas, industrial wastes are the main pollutants. Millions of tons of industrial wastes are dumped into Thailand's river every year. The Me Klong and Chao Phraya rivers are examples of vital Thai waterways dying because of industrial pollution.

The problem of river pollution has "remained despite government efforts to solve it. Many environmental problems are complicated and take a long time to overcome," said Dr Khasem.

Most of the old industrial plants along the rivers have no waste-treatment systems. Wastes are dumped on any available space, often into the rivers.

Authorities make the best of their limited resources and manpower in the enforcement of the 1975 Environmental Promotion and Control Act. The law requires industrial plants to install proper waste-treatment facilities.

But there are too many plants and too few law-enforces to apply the law to the hilt.

Moreover, some factories would rather avoid the law, if they can help it. "Investment in a treatment system is high and it's quite difficult to expect voluntary compliance with the law. Many big factories do not want to pay the huge expense, while the struggling plants simply can't afford it," Dr Khasem said.

Air and noise pollution is another growing problem that Thais, especially those living in the urban centres, must content with.

Dr Khasem said that if it were any consolation to the Thais, the pollution situation in other Asian countries was just as bad. And he blamed public apathy for the worsening problem.

He said: "Environmental problems have been left to the government to solve. There is no public participation. People who complain about pollution are mostly those who are directly affected by it because of their proximity to a factory or river.

What people do not seem to realise is that they are affected by pollution in varying degrees wherever they are."

He said that the best approach to the problem is to enlist everybody's assistance. "People must be made aware of the dangers posed by pollution. They must be encouraged to participate actively in the effort to minimise the problem."

To draw people's attention to the problem, the NEB has introduced environmental lessons in schools, starting from the primary level. "I believe that by educating the people, we shall have gone a long way in combating pollution," Dr Khasem said.

- Depthnews Special

CSO: 5000/8012

LAND USE RESTRICTIONS GAIN IN SENATE; PROJECT FOUGHT

Law To Ban Development

Hamilton THE ROYAL GAZETTE in English 8 Jul 82 p 5

[Text]

A change in the law that will allow owners of land and buildings to ensure development never takes place on their property was approved in the Senate yesterday.

The Bermuda National Trust Amendment Act allows the Trust, with the sanction of the Planning Minister, to make binding agreements with owners who want perpetual restrictions on development of their land.

The legislation was presented by Senator Gerald Simmons a former president of the Trust, who hailed it as a major step.

"The owner of a farm property might wish to ensure it remains farmland for time immemorial," he said.

"This sort of agreement would ensure it always will."

Senator Simons said the agreements would also mean buildings could be protected without the Trust having to buy them, as has usually been the case in the past.

Senator Jennifer Smith (P.L.P.) said the Opposition were "very pleased" to see the legislation and were supporting it.

Apartment Project Battle

Hamilton THE ROYAL GAZETTE in English 12 Jul 82 p 1

[Text]

Another environmental fight loomed on the horizon last night as a result of a proposed development at Ord Road's western end of five apartment blocks containing 20 two-bedroom units.

Roseville Development Objectors, who are Ord Road residents, will voice their objections to the proposal on Thursday at 8.30 a.m. at a Development Applications Board hearing. Fellow objector are the Bermuda National Trust, the Road Safety Council and Warwick East M.P.s Mr. Lloyd James and Mr. Walter Brangman, who met with the R.D.O. during the weekend.

The object of their protest is the proposal of developers Mr. Dickie Bird and Mr. John Butterfield. The Warwick property includes registered arable land.

Mr. Kenneth Monkman, chairman of R.D.O., explained in a press release that Mr. Gladwyn Robinson farms a large field adjacent to Roseville Garden, which he may lose together with a good crop of sweet potatoes if the Planning Department approves the proposal.

The five apartment blocks would not only bury Mr. Robinson's field, which measures 0.36 acre, but also an even larger piece which presently lies fallow.

"This piece located adjacent to the old railway right-of-way has provided our endangered bluebirds with a quiet haven amidst the heavily developed Warwick parish," Mr. Monkman continued.

He noted that Forest Hills development, just south of Roseville, is already overloaded by traffic. "Forest Hills contains some 50 lots, which when completed would have as many as 120 homes in it," he added. "Under the present Traffic Regulations, each home could have as many as two vehicles registered or a total of 240 cars and cycles."

"This staggering figure does not included trucks and vans whose drivers are permitted to take their vehicles overnight. This all adds up to a very dangerous and unsightly additional burden on a winding, picturesque road."

The objectors also stated that they were not opposed to development in the area but to the "intensity" of the proposed development.

CSO: 5000/7555

AIR POLLUTION, OCCUPATIONAL HAZARDS CAUSE CONCERN

Quito EL COMERCIO in Spanish 12 Jul 82 p A 1

[Article by Marco Mendoza]

[Text] Air pollution resulting from industrialization and the increase of fuel consumption have become a source of concern because its effects are becoming wide spread, according to what specialized agencies are saying.

Urbanization and industrialization increased greatly before it was noted that the air was being contaminated. Man put off looking into its components for centures, but recently he has become aware that he cannot continue using the atmosphere as a great rubbish heap without putting his welfare and his very life in danger.

Atmospheric contamination is a problem that worries the entire world. Transit of cars, burning of fuels and disposal and waste systems are poisoning the air.

Agricultural areas near cities use a variety of pesticides which get into the rivers whose waters are considered potable by the local towns. Also, drilling for oil in the sea is a menace to the environment. Hydrocarbon contamination can destroy the ecological balance of a nation.

Public retail stores are contamination points for foods. A study by the Ministry of Agriculture concluded that tomatoes sold in the markets of Quito contain the insecticide "Ramaron." It is applied to the plants each week during their growth.

Problems of environmental health also include aspects of occupational health, but these are given less attention. They show that workers in certain kinds of industry are exposed to physical, chemical and biological risks that bring about occupational hazards. In general terms, between 30 and 40 percent of this group of workers are affected by job related deafness.

Many suffer the consequences of dermatosis due to the use of chemical substances. There are instances of silocons in workers in quarries, ballon factories, etc. Occupational cancer is a risk that even the International Labor Organization (ILO) is detecting in a series of manufacturing industries.

Biological and chemical contamination greatly affect many industries causing worker absenteeism.

Industrialization is hazardous if contamination effects are not controlled. Here, for example, industrialization is already a hazard. In the last years it has grown rapidly. The annual average growth rate between 1970 and 1973, according to the Fundacion Natura was 10.5 percent. It rose to 15.4 percent annually from 1975 to 1976 and it reached 25.3 percent from 1976 to 1979.

The principal industrial centers are located in Quito and Guayaquil and they represent nearly 80 percent of the production. Cuenca, Manta, Ambato, Riobamba, Latacunga and Esmeraldas are centers of lesser importance. Of a total of 946 qualifying businesses, 79 percent are concentrated in the Pichincha and Guayas Provinces. About 60 percent of the light industry and handcrafts are located in this same region.

One must look with special attention to the fact that industrial plants have developed haphazardly, locating themselves within cities without responding to any type of ordinance, which, even if one existed, "is a dead issue."

Air contamination is a latent danger. One of the greatest causes for this hazard are exhaust fumes from automobiles. The number of vehicles is increasing rapidly in the country. Between 1970 and 1980 it has increased more than six-fold, says the Fundacion Natura. During this same period gasoline consumption increased 10 percent.

Air pollution by ethyl lead is seen as the most serious problem. Tetraethyl (Tel) is an ingredient in gasoline that escapes during combustion. For every thousand gallons of gasoline burned, the air gets 0.14 grams of solids, including zinc, carbon, metalic oxides and a good share of lead in the form of Tel.

Breathing this substance affects the central nervous system and other vital organs. Anemia is one of the manifestations of lead intoxication.

Diesel fuel also shows a more than 3 percent increase in consumption in the last 10 years. Diesel engines produce carbon particles, especially in engines needing tune-ups, which abound in the cities of Quito and Guayaquil.

A special and very important source of contamination, according to studies, is in the incineration of garbage. The volatile ashes and odors represent a frequent problem. Trash and garbage dumps, from the point of view of contamination, are a hazard to which man is always exposed. Its moisture content and claoric potential make the design and efficient operation of incinerators difficult.

In view of all this, a movement has begun to take shape which sets forth the necessity for taking the needed precautions to forewarn a greater pollution of the air in our country "before it is too late."

9908
CSO: 5000/2141

CHEMICAL LEAK CONTAMINATES KINGSTON WATER SUPPLY

Kingston THE DAILY GLEANER in English 14 Jul 82 pp 1, 17

[Text] A section of Western and Central Kingston's water supply was contaminated yesterday by wood-preserving chemicals from Wherry Wharf Limited at Newport East.

Contamination of the water supply was caused by the leaking into the water supply system of 2,500 gallons of chemical solution used for treating lumber, making it resistant to termites, from a 20,000-gallon cylinder.

In a statement to the House of Representatives on the incident, the Minister of Public Utilities and Transport, the Hon Pearnel Charles, said the advice from engineers working on the problem yesterday was that there was no great need for alarm and that the effect on consumers would depend on the level of intake.

Prime Minister Edward Seaga yesterday evening instructed that there should be an immediate investigation and that all persons in the island who have any such tanks connected to the water system should immediately disconnect them and put the connection above the chemical level of the tank.

Meanwhile, residents of downtown Kingston have been requested by the National Water Commission not to drink water which had a greenish/yellow discoloration. Yesterday the NWC mobilised an emergency crew to flush out the water mains in the affected area and is monitoring the water quality which is expected to return to normal today.

A Wherry Wharf spokesman told the Gleaner yesterday that low water pressure or a total water lock-off in the downtown area could create a vacuum pulling the chemical from the storage cylinder into the water distribution line. The Gleaner understands that there was a lock-off in the Wherry Wharf area on Monday night.

The Managing Director of Wherry Wharf, Mr Hugh L. Wilson, said the solution contained a small percentage of Arsenic Pentoxide, Copper Oxide, Chromic Acid mixed with water with a concentration of less than one percent.

Mr Chris Marley, a Director of the company, said this incident was the first to have occurred in the history of Wherry Wharf which has been operating since 1967. He said steps had already been taken to isolate the storage tank from the water system. The feeding system leading to the tank is being re-designed to ensure that the situation would not recur.

Mr Charles said it was expected that chemical tanks would have a no-back-flow valve, but indication so far is that the Wherry Wharf tank had none. The tank is used by the company to store chemicals used to treat lumber. The chemicals involved include arsenic, copper oxide and chromic oxide.

Mr Charles told the House: "At about 8.30 this morning, it was discovered that a tank at the Wherry Wharf which contained chemical for the treating of wood had deposited its chemicals into the National Water Commission's water system.

The Water Commission had to turn off its water last night in the lower part of Kingston to re-charge the system from the Rio Cobre. As a result the chemical from the tank fed back into the system.

"The Water Commission after being advised isolated the area, opened all hydrants and is at this time flushing out the system. The public has been advised of the problem and all persons living in the area west of Ellerson Road along North Street, out to three miles and below are asked not to consume any water that is discoloured.

I am to advise the House that the chemical in the tank consisted of 24.5 percent arsenic peroxide, 13.3 percent copper oxide, 32.2 percent chromic oxide, 28 percent water and 0.8 chemical concentrate.

"I have been advised by the engineers and scientists that there is not much need for alarm, dependent on the dilution and the concentration of intake or consumption.

This Minister has contacted the Prime Minister and advised him of the situation and the Environmental Control Division of the Ministry of Health has mobilized all the necessary medical personnel and all the laboratories in Kingston are assisting with the testing and we hope that later this afternoon the go-ahead for the using of water again (in these areas) will be given.

A few million gallons of water will have to be flushed out of the system and all people in these areas who have water in reserved tanks have been advised to flush them out.

The Prime Minister has instructed that an immediate investigation be carried out and that a public statement be made advising all persons in Jamaica who have had any such (chemical) tanks connected to the water system to have them disconnected immediately; and that instructions be given that any such tank in any such factory or otherwise that need water that the connections be made from above the tank, above the chemical and not below.

"It was expected, Mr Speaker, that any such plant should have had a no-back-flow valve and indications are that the Wherry Wharf one did not have. We can only say so at this time as investigations will continue."

The Gleaner understands that the NWC did not know that the tank was attached to the Wherry Wharf supply and that several hours passed between the time the leak was found by the company and when the NWC was made aware.

It is understood that after Wherry Wharf found the leak it had sought to deal with the problem while the chemicals had already leaked into the NWC supply and had contaminated the domestic supply. When the NWC discovered the accident the supply to consumers was immediately cut off in the afternoon.

The Gleaner also learnt that some 2,500 gallons of chemicals escaped from the company's 20,000 gallon cylinder which stores chemicals used for treating lumber.

A team of health officers from the Ministry of Health who were mobilized by the Parliamentary Secretary in that Ministry, Mr Karl Samuda, was up to press time looking into the health aspects of the contamination.

Efforts by the Gleaner to find out what effects, if any, are likely from drinking the water proved unsuccessful. However, it is understood that a Health Ministry team had called an emergency meeting last night to discuss the situation.

CSO: 5000/7555

MINISTER OUTLINES MEASURES TO PREVENT ENVIRONMENTAL POLLUTION

Dar es Salaam DAILY NEWS in English 19 Jul 82 p 1

[Article by Mkumbwa Ally]

[Excerpt]

THE Minister for Lands, Housing and Urban Development, Ndugu Mustafa Nyang'anyi, has urged Tanzanians to visualise the dangers of desertification and environmental pollution facing the country as a precondition to prevent them.

Presenting his Ministry's 1982/83 estimates on Saturday, Ndugu Nyang'anyi told the National Assembly that the country was among victim areas of spreading desertification and environmental pollution and that comprehensive short and long-term preventive plans were vital.

He said world-wide, deserts annexed an average of six million hectares of land annually for the last 10 years, adding that the trend continued despite national and international efforts to check it.

The Minister said unchecked bush fires and tree felling mowed eight million hectares of tropical forests annually on average over the period.

"The result of this has been rapid soil erosion, reduced rains, dry springs and widespread drought," he pointed out.

Ndugu Nyang'anyi said unco-ordinated farming methods and random disposition of storm water made the problem more compound to Tanzania.

He said his Ministry was preparing an educational programme to mobilise the people to understand the scope of the impending danger through the Press.

"It is important that before preventive plans are implemented, the people should grasp their meaning and objectives to ensure maximum participation," he said.

He told the House that measures against environmental pollution would include construction of sewerage systems in urban areas. Some 18,818,000/- would be spent on such projects in Dar es Salaam, Morogoro, Mbeya and Tabora during the year, he said.

He said the final report on the Dar es Salaam project had been submitted to the Government and that implementation would include extensions to the existing system and construction of 3,600 latrines.

Ndugu Nyang'anyi said the first phase of the Tabora sewerage system had been completed at 4.6m/-. The completed part would cater for secondary schools, colleges of national education and the secretarial college at Tabora town.

Tenders would soon be called for designs of drainage and storm water systems in the Mbeya municipality, he said.

CSO: 5000/5785

BRIEFS

VILLAGERS STEAL WATER--Bulawayo--District drought relief committees in Matabeleland South are calling for the speeding up of water development projects after reports that in some parts of the drought stricken province people are either stealing or paying up to $3 for a drum of water. Teachers in Plumtree are reported to be paying for water and the chairman of Umzingwane District Council, Cde Masilela, said: "People need help to get water and we were promised water-pipe schemes but nothing has been done. In some cases people have been arrested for stealing water from nearby farms." To help villagers get water from dried up riverbeds a sand-abstraction programme has been launched. [Text] [Harare THE HERALD in English 21 Jul 82 p 7]

DROUGHT INCREASES POACHING--Bulawayo--Poaching is on the increase in Binga because of the drought, the chairman of the Matabeleland drought relief committee, Cde Jacob Mudenda was told during his two-day tour of the Matabeleland North districts. It was pointed out by Hwange magistrate Mr S. Nari who is also the visiting magistrate to Binga. He said court cases involving poaching were on the increase and people said that they were doing it to earn a living. At Hwange, one councillor suggested that food be railed to the mining town as there was a depot there but Cde Mudenda said this would cause delays. A councillor at Lupane said that people were not satisfied with the 16-litre tins being used for distribution. In reply, Cde Mudenda said that the national committee had said that each recipient should get 16 kg. If the tin carried that amount then it was enough. Councillors had to explain to the people that the food was meant for survival only. At Inyati, the problem was pensioners in the Kenilworth area. Under the criteria laid down by the national committee, they are not supposed to benefit from the drought relief but Cde Mudenda said such cases had to be studied individually. Nkayi's problem was getting more groundnuts than maize. This was to be checked. [Text] [Harare THE HERALD in English 22 Jul 82 p 4]

CSO: 5000/5786

AIR POLLUTION WORSE THAN LAW ALLOWS

Vienna PROFIL in German 19 Jul 82 p 49-51

/Article by Josef Votzi: "Danger! Air under Attack"/

> /Text/ In all large cities of Austria air pollution is worse than permissible by law. While the authorities continue to fight about how much "federal air" and how much "Land air" is involved, the power lobby still calls the shots when it comes to emission controls.

The Graz men's store "Gentlemanlike" is taking advantage of the seriousness of the situation by coming up with a marketing ploy: owner Ludwig Draxlbauer has brought out Austria's first environmental protection tie. The tie, which costs just under 300 Schillings, permits its wearer to check on the quality of the air he is inhaling at a given moment. If there is sulphur dioxide present in appreciable quantities--so the promotional material claims--the tie reacts by developing holes in its lining. The manufacturer says that if the holes do show up, the idea is to change the environment and not the tie.

Graz was the right place to test the neckties. During this January alone, the smog alert should have been sounded on 22 days out of 31. In the northern parts of town, maximum permissible levels of SO_2 were more than double what they should be at times. The authorities did not sound the alert by resorting to a trick. For several years now, Styria has had a clean air law on the books but the corresponding regulations setting maximum levels and other measures were not put out until this March--in other words, not until the worst was over.

In the winter, the air in Linz is adversely affected by the heating season and the fact that weather conditions do not permit an exchange of air. The resultant smog regularly calls for a kind of internal alert. "Since we instituted our smog alert plan in 1976," says Johann Stubenrauch, Upper Austria's clean air chief, "we have reached the pre-alert stage at least once each year in the late fall or winter." In practical terms, this means that environmental protection officials are now watching their instruments around the clock, waiting for things to get better.

Existing regulations permit them to do little more than that. Air quality in Austria happens to be (another) victim of excessive federalism. The bureaucracy makes a fine distinction between federal air and Land air. Whatever finds its way into the atmosphere via private heating plants—particularly SO_2—is classified as Land air and the vast remainder—namely 90 percent of all pollutants—is classified as federal air. And this latter in turn is the responsibility of three different ministries. Auto emissions are the responsibility of the minister of transport; industrial pollutants are those of minister for commerce and pollutants from power plants and remote heating installations are the concern of the ministry of building and construction.

But for the many lords and masters, some of the air just seems to vanish—into thin air. Lower Austrians for example are swamped with annual SO_2 levels equal to 7,000 railroad freight cars without being able to pinpoint their origin. For all of Austria, the corresponding total amounts to some 450,000 tons of pollutants.

One-quarter of all SO_2 emissions, it has been found, is caused by our 33 caloric power plants and remote heating plants; another quarter is caused by similar industrial and commercial installations.

The scientists know this much about the effect this continuing attack on our air is having: SO_2 is an irritant which attacks the mucous membranes of the human eye, the respiratory tract and the bronchial tubes. Chemical changes effected by body metabolism do not exclude chronic damage to the nervous system. The dust which usually comes down in conjunction with SO_2 poses an acute danger to small children and old people even in minimal doses. This type of unhealthy air, health ministry air expert Wolfgang Struwe says, "turns up in Austria's metropolitan centers particularly during the winter months." Even Vienna's environmental protection official Helmut Loeffler concedes that "injuries to health cannot be excluded here during the winter months."

30 kilometers to the west of Vienna, the doctors have already sounded the alarm even though the district capital of Tulln has not as yet appeared on the countrywide blacklist. Tulln public health officer Willibald Stangl says that autopsies performed on perfectly healthy people have revealed toxic changes of the lung and heart "caused by air pollution." According to Stangl, the extremely high infant mortality in the Tulln district may also be attributable to some extent to poor air quality. For some time, a chemical plant and a caloric power plant have been polluting the air around Tulln. Ever since it became known that NEWAG and the electric system are planning on another steam power plant in the Tullnerfeld, protests from the population and from medical men have been mounting. A resolution signed by 70 physicians form the district provided for much excitement at the negotiations held 3 weeks ago on construction of the coal power plant at Duernrohr. The physicians and some local residents are calling for 100 percent desulphurization of the emissions so as "to prevent serious injury to health, disablement and deadly ailments among the people under our care."

Those responsible for building the power plant say they will be able to prevent only a little more than half of the "aggressive poisons" from escaping. 2 years ago, they were willing to come up with only 40 percent. "At that time," says Otto Sommerbauer, managing director of the electric system, "all the experts testified that there was no threat to plant and human life." Assistant medical director Franz Stoeger of Tulln has this to say about his colleague's findings: "The medical expert takes 36 pages to say how dangerous it all is and then on page 37 he suddenly concludes that there are no medical grounds for not starting operations. But we medical men are not only called upon to repair the damage once it has been done. Health comes first; money comes second--and even electricity turns out to be more expensive that way."

Desulphurization costs of one billion Schillings, the operators say, would raise the price of electricity produced by the Duernrohr plant by 10 to 20 Groschen per kilowatt hour. "If even dental technicians claim to know more than our medical expert, " Sommerbauer complains, "then the rule of law in Austria is in a bad way indeed. Construction has already been delayed by more than 1½ years."

Not the least reason for the fight about Duernrohr being so violent is the fact that the desulphurization level there will become standard for all future caloric energy plants. There is another connection in that the technical expert for the project has been acting in a dual capacity. Albert Hackl, a professor of engineering, not only selected the type of desulphurization process to be employed on behalf of the Lower Austrian Land government and then gave it his imprimatur on behalf of the builder (the mayor of Zwentendorf) but he also is a technical expert for the ministerial committee that has worked out countrywide norms for these installations and others like them. Duernrohr thus meets the SO_2 emission level which the so-called boiler regulation will specify for future power plants.

The regulation not only represents a compromise between officials and operators but also is the result of a more than one-year tug-of-war between three ministries. The construction, commerce and environmental protection ministries all had to sign off on maximum permissible emission levels. Sekanina and Staribacher already did so in May. Now Kurt Steyrer, the Minister for Health and Environmental Protection, has followed suit after wavering for some time. "I am not happy with the result," he says. "The levels are relatively high and they do not correspond to the latest state of technology as required by law. Vis-a-vis the other ministers, I was faced with the choice of risking that nothing whatever would happen or that this regulation would be approved which at least prevents all existing installations from continuing to pollute the atmosphere."

The projected coal power plant at Mellach in Styria proves that present desulphurization technology is good enough to satisfy almost half of the norm. Under pressure of a local citizens' initiative, the two large political parties suddenly outbid each other on emission control levels. Kurt Steyrer is hoping for help from that quarter so as to achieve what two minister colleagues as well as the soft coal and power lobby have thus far denied him. "I hope," he says, "that the citizens' initiative movement will be as strong as in Mellach so that we will in many instances remain below the levels called for by the regulation."

In the Duernrohr case, Vienna's environmental chief Peter Schieder is holding all the trumps at the moment. By saying "go to the Vienna Woods and say farewell to the trees," Schieder has joined the ranks of those calling for 100 percent de-sulphurization of the giant 700 megawatt plant in the Tullnerfeld. The city of Vienna appealed to the courts to be granted local resident status.

In the meantime, Schieder—worried that he might have gotten ahead of himself—called on minister Steyrer to arbitrate the Duernrohr dispute. "I honestly don't know whether I am the one to do this," Steyrer says. "I do have strong views of my own. Present technology surely ought to make 85 percent de-sulphurization of the Duernrohr plant possible." And Steyrer adds: "This is bound to have some consequences on Vienna, too."

The Simmering power plant in Vienna alone emits twice as much SO_2 per hour as Duernrohr ever will the way things stand at the moment. The direction of the wind frequently carries these pollutants into the Vienna Woods area.

"The woods are in danger," forest ecologists have been crying for years whenever the subject turned to "acid rain," a by-product of heavy SO_2 emission. Acid rain in the form of sulphuric acid formed in the combination of SO_2 and rainwater seeps into the ground and so is taken up by the trees insofar as SO_2 in its pure form has not already done the job.

Experts say that between 3 and 5 percent of the Austrian forests are already acutely affected by this silent death.

The economic consequences of acid rain have already led the farmers and forest administrators of the Lavant Valley in Carinthia to go to court. They claimed damages amounting to 12 million Schillings annually due to the fact that the steam power plant at St Andrae spills up to 2,000 kilograms of SO_2 an hour into the valley. After the case had finally been heard by the supreme court in 1979 the operators paid back 1,000 Schillings per hectare—half the amount claimed—for the years from 1969 to 1979. For forest damages incurred in the meantime the courts will have to find in new proceedings. The operators appear to figure that partial reimbursement still comes cheaper than the installation of a de-sulphurization plant.

Christoph Habsburg-Lothringen, the forest administrator concerned, says: "Unfortunately, industry still tends to think in short term patterns. By increasing the height of the smokestacks to 220 meters, they are hoping to enlarge the affected area and decrease the SO_2 concentration in the atmosphere—but in the end things stay as bad as they were."

Until recently, the higher smokestack gambit was the best solution the operators and the authorities managed to come up with. The consequences of this policy can be felt all over Europe. Without regard to national frontiers, "acid rain" is exported and imported clear across the continent. "Even if Austria no longer emitted any SO_2 at all," clean air specialist Wolfgang Struwe says, "I doubt whether the 'acid rain' picture in our country would change appreciably."

This contention will be hard to prove in this century. As early as in 1975, parliament approved environmental protection rules for woodlands. The orders for implementation have still not been issued. Guenther Haiden, the author of the legislation, puts it this way in explaining the 7 lean years: "It has been tough sledding throughout this time because there are diverging interests. But I will put the matter to the cabinet this summer still."

What has become public with regard to the implementation text does not sound too encouraging. The most recent draft was characterized in an internal health ministry memorandum "as an attempt to supplant the major provisions of the forestry law with regard to air pollution with provisions favorable to industry."

The health ministry suspects the minister of commerce above all of being out to scuttle environmental protection legislation. As it happens, the implementation order not only requires the signature of agriculture minister Haiden but those of Staribacher and Sekanina as well.

Kurt Steyrer wants to see a clean air act passed prior to the next elections. He calls it the "real key to environmental protection." Steyrer would like to assume sole responsibility for the federal air and the Land air presently lodged in three different ministries. By divesting himself of the reponsibility for the country's spas, he would like to assume the other duties before the year is out. "Then I would be the one responsible for setting maximum levels," he says, "and the results would certainly be better than under the boiler regulation."

Environmental standards such as they are, says Vienna environment official Helmut Loeffler, "have always been porkbarrel affairs. It was not a matter of substantive arguments but of balancing off conflicting interests." Those who do pollute the environment are rarely prosecuted. "The only thing some of the Laender are really good at now," says environment expert Werner Katzmann, "is at making measurements. A lot of money was spent on setting up the appropriate networks. But what came after has never amounted to anything yet."

9478
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LARGE QUANTITY OF PCB DUMPED ILLEGALLY IN ARCHIPELAGO SEAS

Was Supposed To Be Shipped To GDR

Helsinki HUFVUDSTADSBLADET in Swedish 1 Jul 82 p 1

[Text] Our present laws on toxic substances and problem waste are sufficient, but the problem is the poor supervision. For the time being, the various facilities should concentrate on carefully storing the waste that cannot safely be destroyed. Thus, the problem waste facility in Riihimaki should begin operating as soon as possible, according to Olli Ojala, head of the environmental protection section of the Interior Ministry.

According to the waste disposal law, an industrial plant that produces problem waste must devise a plan for waste disposal stating how that plant proposes to destroy or store the waste. The plan is submitted to the authority in the municipality in question that is responsible for waste disposal problems. The plan then is sent to the provincial council. "The problem is that it is impossible for us to make sure these plans actually have been sent for examination and whether they are based on objective considerations. The division of the environmental protection bureaucracy does not help matters, either," Ojala said.

In the final analysis, the person who recently dumped toxic substances into the Archipelago Sea bears the responsibility. But those who delivered the toxic substances to him are not free of responsibility, especially since they did not investigate the waste disposal company's ability to transport and destroy the waste, Ojala said.

"To be sure, the company maintained that the waste would be transported to the GDR, but such exports require approval from the authorities and, in this case, even the approval of a cabinet minister. The recipient country also should be contacted. We have received no information on this transport, even though some rumors have been in circulation," Ojala said.

"In the Dragsfjard case, not only the ocean protection law, but also the criminal code was broken, since the containers were left to float around freely so that anyone could come into contact with them," Ojala continued.

Problem Waste Facility

Ojala said it was extremely important that the problem waste facility in Riihimaki begin operating as soon as possible. According to Ojala, the plant would cause no significant damage to the environment.

Waste that contains oil comprises the largest group of problem wastes. Surface treatment wastes, which are extremely difficult for small companies to destroy, are another problem. Solvents used in the chemical, graphics, and pharmaceutical industries also are a major cause of concern.

It is possible to recycle and reuse these solvents, however. Pesticides that have been contaminated or have not been used also lead to problems. Ojala believes, for example, that DDT still may be found in various warehouses. In the Turku case, PCB which no longer is used in industry was found.

Household Poisons

Households also contain wastes that many people do not even see as problem waste. One example of such waste is batteries that contain mercury and cadmium which are harmful to the environment. Old paints also may contain cadmium.

Small batteries used in cameras, pocket calculators, etc. usually contain much mercury. These batteries should be collected rather than transported to municipal waste facilities.

New Law

In April 1983 a new law will take effect requiring municipalities to dispose of problem household waste, Ojala said.

Police Search For Ship Owner

Helsinki HUFVUDSTADSBLADET in Swedish 7 July 82 p 11

[Article by Staffan Bruun]

[Text] Police are searching frantically for the owner of the trawler Normandie. It is believed that the toxic waste found near Dragsfjard was dumped from the Normandie. As of yesterday, however, the boat's owner had not been found. A nationwide search by police is expected to begin shortly.

No new poison finds were made yesterday in Dragsfjard. Police are continuing interrogations to learn more about the dumping.

Two persons are in custody: the truck driver who drove the toxic waste to Kasnas and the Helsinki lawyer who is associated with Euro Industri. He led the negotiations with Nokia and Centrallaboratoriet. It was he who promised that the poison would be transported to the GDR.

But the person the police are most anxious to find remains at large--the owner of the Normandie. Only he can point out precisely where the poison was dumped. He is the only one who can help retrieve the rest of the poison from the bottom of the sea.

"It is hopeless to begin diving before we know exactly where we should look," a police representative said.

Yesterday police in Turku questioned several people who either were suspected of being involved or were witnesses.

Taken Away

The toxic waste discovered Monday in a forest near Turku already has been removed. Yesterday Nokia transported all 20 tons from the forest back to the capacitor plant in Tammerfors. At the same time, Nokia took its share of the toxic waste found in Dragsfjard back to Tammerfors.

Centrallaboratoriet will collect its share in Dragsfjard today and transport the toxic substance to Otnas. So far, 500 liters of poison have been found in Dragsfjarden.

Euro Industri has received a total of 33 tons of toxic waste from Nokia and 2,500 liters from Centrallaboratoriet, but other companies also have delivered toxic waste to Euro Industri. The police have contacted various companies, but as of yesterday their questioning had yielded no results.

Plant May Be Built In Riihimaki

Excavation work for the planned problem waste facility in Riihimaki will begin next week. Finlands Problemavfall AB was granted permission yesterday by the town of Riihimaki to begin construction on the facility.

The attorney general has received three appeals concerning placement of the facility in Riihimaki. All appeals have been denied.

Finlands Problemavfall expects the facilities in Riihimaki to be complete in mid-1984. Only then can the facility begin to receive waste, according to technical director Matti Vattulainen.

"But even now we are helping companies dispose of their toxic wastes. We have contacts abroad with plants capable of handling various types of poisons. We render help to anyone who wants it, but cannot promise results. We certainly cannot promise that the companies will dispose of the waste at a price as low as Euro Industri would charge.

Euro Industri promised to transport the toxic substances from Centrallaboratoriet to the GDR for 2 marks per liter. Matti Vattulainen laughed when he heard the price, but he would not say how much it would cost for Finlands Problemavfall to transport the toxic waste to the GDR.

"The price would be considerably higher, but it would depend on what type of poison was involved, how it would be packaged for transport, how it would be handled, etc."

It may be mentioned that the post office rate for a package weighing 1 kg to the GDR is 35 marks, while Euro Industri wanted 2 marks.

Chemical Factory Spokesman Comments

Helsinki HUFVUDSTADSBLADET in Swedish 7 Jul 82 p 11

[Article by Staffan Bruun]

[Text] Two companies have admitted delivering toxic waste to Euro Industri. Both companies state that Euro Industri promised to transport the toxic waste to the GDR. Neither company suspected foul play, even though Euro Industri asked for only 2 marks per liter to dispose of the toxic substances. Thomas Zilliacus of Nokia and Jan-Erik Levlin of Kemiska Traforadlingsindustrins Forskningsanstalts Centrallaboratorium responded to questions about the case.

"The person responsible for waste management is not a legal expert. In addition, he had no opportunity to investigate Euro Industri."

"The price was not at all low. It was the going rate for such transactions. Previously, we shipped our toxic waste to England. The last shipment was in the late seventies. The price at that time was the same as that received by Euro Industri in this case. We quit sending waste to England because the price increased drastically a year or so ago," information director Thomas Zilliacus said.

"This time when we had to get rid of some PCB, Euro Industri appeared. They promised to transport the toxic waste to the GDR where it was to be buried in salt mines. According to our information, this actually occurs in the GDR."

He was asked if no one suspected foul play on the part of Euro Industri and if the company had been investigated.

"No one suspected anything and the company was not investigated. The waste disposal process at Nokia occurs at a low level. The person at the capacitor plant in Tammerfors who handled the deal is no legal expert. He also had no opportunity to investigate Euro Industri. In addition, the company gave no indication that anything was less than proper."

Zilliacus was asked what would be done with the toxic waste now.

"We will go to Dragsfjard immediately to reclaim the containers that originated at our plant. In addition, we will remain in contact with the police and do everything possible to recover the waste now lying at the bottom of the sea. It is in our interest to recover the waste before it harms the environment."

What will be done with the poison now?

"First it will be returned to the capacitor plant in Tammerfors where it originated. Then we must try to find a facility that will dispose of the toxic substances in a legal manner. We may have to contact the facility in England again."

Zilliacus was asked what Nokia generally did with toxic waste.

"We use only small quantities of toxic substances. Of these substances, PCB used at the capacitor plant clearly is the most dangerous, but PCB has not been used for 7 years. The waste we recently attempted to dispose of was used in old capacitors. Nokia is a major shareholder in Finlands Problemavfall. No one will be happier than we when the Riihimaki facility begins to operate."

"In 20 years of operation, this was the first time we had to dispose of toxic waste. Then Euro Industri appeared and we trusted them," Jan-Erik Levlin said.

"It is easy to say in retrospect that we should have investigated this and that, but we acted in good faith. The representatives from Euro Industri were convincing. We simply believed they knew what they were doing. Now we must admit that, unfortunately, they did know," director Jan-Erik Levlin said.

Now 2,500 liters of toxic waste from Centrallaboratoriet are at the bottom of the sea near Dragsfjard. According to the law, Centrallaboratoriet bears part of the responsibility. Levlin was asked if he expected legal proceedings.

"We have not yet studied the matter. You must remember in the midst of all this that the quantity of toxic waste we produce is small. We simply bore the brunt of the first wave of publicity. It was said that 2,000 to 2,500 liters came from Centrallaboratoriet, but it must be remembered that most of this amount is accounted for by the packaging. The toxic waste is in bottles and canisters containing from several milliliters to 3 to 4 liters. All this was packed carefully in tanks with sawdust."

Levlin was asked if it did not occur to him during packaging that it all would end up in the sea.

"We were given detailed instructions from Euro Industri on how the toxic waste should be packaged. This contributed to our belief that they knew what they were doing. Swindlers act in such a way that their victims are lulled into a feeling of security. This is why they are successful in their deception."

Levlin was asked what his company had done with toxic waste previously.

"This is precisely the problem. We never had toxic waste before. For this reason, we had no experience in such matters. We have operated in Otnas for 20 years and only small quantities of toxic substances have been used. We maintained a storage room, but it gradually became filled. This year we finally decided to dispose of the waste and at that time Euro Industri appeared on the scene. The first time we disposed of toxic waste all these problems began!"

He was asked what would become of the company's waste in Dragsfjard.

"We are sending a truck with our personnel today to take care of our share of the toxic waste that has been found. It will be returned to the storage room. Now we must start over and attempt to dispose of the toxic waste.

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PAPER URGES DEVISING NEW HAZARDOUS WASTE RULES

Helsinki HELSINGIN SANOMAT in Finnish 8 Jul 82 p 2

[Editorial: "Elimination of the Waste Problem Must Be Stepped Up"]

[Text] The commotion and agitation created by the poison-filled barrels outrageously sunk into the depths of the Baltic are quite understandable. At issue is no less than those materials that badly contaminate the environment and seriously endanger people's health which are of necessity at present being produced by industry. The problem is a familiar one throughout the industrialized world. The most recent examples of different kinds of major waste disposal scandals include the United States, the Netherlands, Denmark and Sweden.

Our very own scandal has positive sides to it despite its generally negative nature. Among other things, this is arousing people to awareness of the seriousness of the waste problem and to the growing significance of environmental protection in their daily lives. The closer an event comes to the environment one lives in, the more one is interested in it. The Dragsfjard poison controversy can hardly fail to affect everyone. It is of quite a different nature from those relatively small incidents in connection with which the so-called environmental protectionists have usually appeared.

The positive side of this scandal also lies in the fact that it has brought the seemingly incredible shortcomings of our handling of waste out into the open. Implementation of the waste handling law that went into effect in the spring of 1979 has progressed at a snail's pace. The public authorities really seem to have erred in thinking that the matter has been taken care of simply because it is being regulated by law.

A conclusion is to be drawn from the already available facts. Municipalities which under the law have been entrusted with the responsibility of arranging for the handling and control of waste materials have in very many cases behaved in a negligent manner with respect to it. Thus the business of waste dumps is often in a bad way and arrangements are not made for the temporary storage and transshipment of waste materials, not to mention the reception points for hazardous waste which the law requires. The latter are very rarely found in the municipalities.

The provincial governments, which according to law are responsible for managing and supervising the handling of waste, act just as slowly in respect to this matter. They excuse their inefficiency on the grounds of a shortage of manpower, which is indeed part of the reason why. The Ministry of Interior, which is the top echelon for the management and supervision of the handling of waste, on the other hand, looks down from above, waits to see what the municipalities and provincial governments will do and praises the excellence of the waste handling law.

There is, however, a gap in the law. There is no followup procedure in it by means of which national officials may obtain information on the municipalities' handling of waste. The law does not even make it mandatory for municipalities to report on their plans. The provincial governments could, to be sure, request information from the municipalities but they have not demonstrated any active participation either.

While municipal self-government is indeed to be defended and respected, in this matter some sort of obligation on the part of the municipalities to make their measures more effective would obviously be appropriate. This need not by any means nor should it be allowed to interfere with their self-government. Or will this poison scandal otherwise arouse the municipalities to take sufficient action? Businesses and property owners may, of course, also in part be accused — just as public authorities have been — of failing to apply the waste handling law, since they have not actively enough presented their plans for arranging for the handling of waste.

The main reason is, however, that no one really knows anything about how to do so.

Problems for the municipalities in the business of taking care of waste are, of course, in part the lack of manpower and insufficient expertise. Both can probably be resolved and the existing manpower can be used in other ways than it now is.

The same applies to many national administration departments whose duties have diminished in number or which could gain a great deal from reorganization. An Environment Ministry plan, on the basis of which scattered resources can be concentrated and the handling of tasks made more effective, is also aimed at this.

Thinking of the plan for a hazardous waste institute, the poison scandal has given us a clearcut lesson as to the right foot with which to start out. It indicates the direction we will drift in if the institute is not quickly gotten into operation. The government will have to in every way speed things up and help establish a hazardous waste institute rather than continuing to think up all sorts of excuses for putting it off.

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WORK STARTING ON COUNTRY'S HAZARDOUS WASTE PROCESSING FACILITY

Helsinki HELSINGIN SANOMAT in Finnish 29 Jun 82 p 6

[Article: Work on Hazardous Waste Treatment Plant Beginning in July"]

[Text] Hyvinkaa--The construction of a hazardous waste treatment plant in Riihimaki will begin in the middle of July even though it is not yet known how a funding deficit of 50 million markkas will be made up.

The funding deficit came about when the government agreed last week to provide the company with only 45 million markkas in assistance and other subsidies. The company requested 90 million markkas from the state.

The government assumed that the waste treatment plant would have to be reduced or 50 million markkas' worth of investments would have to be transferred. A special corporate meeting of the Suomen Ongelmajate Corporation approved an investment and funding plan and left the government with the responsibility of finding places in which to economize.

'Savings by Means of Competitive Contracts'

According to Managing Director Folke Aarnio it would be impossible to change plans in a few days. "The government is now considering whether transfers can be made. On the other hand, the cost estimate of the project has been compiled by the planners and savings could be obtained, for example, by competitive bids."

The nationwide plant to be built in Riihimaki for the purpose of treating poisons and other waste products that are difficult to dispose of will cost 315.5 million; including interest payments and start-up costs, expenditures will increase to 486 million by the end of 1986. The waste treatment company is owned by the state, local governments, and industry.

The City of Riihimaki has sold the company a lot, but it still does not have a building permit or a waste treatment permit, which it will need before the plant can be put into operation.

Differences of Opinion on Priority of Permits

The plan for the hazardous waste treatment plant has been contested all the way to the highest court of administration. The issue is yet to be resolved.

There are differing views on the "order of importance" regarding the building permit and the permit to treat waste. Some consider that the building permit should be issued before the provincial government issues a waste treatment permit to the plant, which contains stipulations concerning the kind of plant that should be built.

According to Assistant City Manager Ensi R. Louhiluoto in Riihimaki they are of the opinion that a building permit cannot be denied. "We are only issuing a permit to build the walls, others will determine what can be done inside them."

According to Louhiluoto the city can make a decision on the building permit even if the highest administrative court has not yet ruled on the complaint.

Work Will Begin With Property Permit

The company intends to begin work on the lot with the so-called property permit, which gives it the right to accomplish the necessary earthmoving operations. According to Managing Director Folke Aarnio it is important that the company be able to accomplish this work during the summer so that several million markkas can be saved.

The City of Riihimaki has received the statements it requested for granting the property ownership permit and the permit will be issued next week. The board of directors of the waste treatment company decided on Monday that work would begin immediately when the permit is received.

Earthmoving operations will cost approximately 10 million. In the fall the company will decide on ordering a fuel plant. It will cost approximately 120 million markkas together with the reservoir and buildings.

10576
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COMMUNIST ORGAN CHARGES LAWS INADEQUATE ON AIR POLLUTION

Helsinki KANSAN UUTISET in Finnish 1 Jul 82 p 6

[Article by Oili Alm: "Our Sulphur Discharges Are the Biggest in Europe Per Person"]

[Text] Air protection is still in its infancy in Finland. Industry has for a long time failed to do anything with regard to the content of the air protection law. Medical Board recommendations on the maximum allowable concentration of pollutants are cautious even in comparison with international standards. And their supervision depends on industry's own reports. As for industry, it is able to conceal the results of harmful research.

The problem as a whole is underrated and this is easy to do because air pollution relatively rarely produces direct symptoms in human beings. Nature reacts to pollution more rapidly and that further affects people. Fish are disappearing from the clear waters of the North's rivers and lakes and different kinds of allergies are becoming common. Are economic concerns more important than health concerns?

In Finland the most significant air pollutant is sulphur dioxide. About 60,000 tons of it a year are released into the air. A good 60 percent of that volume comes from industrial discharges.

Sulphur dioxide and minute particles cause enervation of the bronchial cilia, excessive growth of the pituitary gland and copious mucous secretion. The result is coughing and a decrease in the ability to resist infections. In the United States a direct connection has been shown to exist between pollutant content and bronchial infections in children.

In Finland occasional days, weeks, even months go by without periods of pollution, generally in winter, and these pose a problem. Local concentrations may rise to very high levels. Then healthy people too, not to mention those who are chronically ill and asthma sufferers, are in danger.

Filtering Would Help

Hydrogen sulphide and mercaptans are particularly evil-smelling and poisonous gases which are produced in the paper and petrochemical industries, ore processing and the treatment of waste water, among other processes. In addition to being disturbed by the smell, people living in the neighborhood of lumber mills, for example, at Valkeakoski and in Oulu, suffer from headaches, poor health, infection of the cheek hollows and conjunctivitis.

"Too often we try to get rid of the pollution problem by erecting high smokestacks at plants in order to 'democratically' distribute pollutants. As for new plants, pollutants could be eliminated with filters and the process would not essentially increase construction costs. Aside from the fact that economic reasons must not be allowed to interfere with people's health," researcher Antti J. Hakkinen commented.

Although the effects of air pollution on people's health can only be directly shown as far as risk groups are concerned, Hakkinen is of the opinion that the "risk" that potentially dangerous pollutants are eliminated if only there is a possibility of doing so must be taken.

When speaking of air pollution in Finland, the fact is often pointed to that our country is tied to international trade and we cannot make decisions that deviate from those of other countries. Moreover, such people say that much of the pollution reaches Finland over long distances from Central Europe.

In the opinion of researcher Antti J. Hakkinen, Finland's role should involve being noticeably more active in striving to obtain international agreements on air pollution. Finland's recommendations on pollutant concentrations are noticeably higher than in the Soviet Union, for example.

Acid Rain from Europe

About half of Finland's sulphur volume stems from long-distance propagation. Finland still "enriches" other countries with its own discharges. The reason for Scandinavia's acid rain is chiefly held to be the fossil fuels used in the industrialized areas of Europe.

When fossil fuels, that is, coal or oil, are burned, sulphur, which forms acid compounds in the air, is produced. These sulphur compounds are eliminated from the air in two ways. By dry precipitation we mean the precipitation of particles while gaseous sulphur dioxides remain on the exposed surfaces. By wet precipitation we generally mean acid rain.

They have not yet been able to demonstrate the effect of acid rain on tree growth because the effect is fairly slow. On the other hand, the effects it has on waterways are provable. Among others, the rivers that run through the seven southernmost Norwegian municipalities, in which salmon used to be found, had lost practically their entire salmon population by 1970 and it has been confirmed that other fish are rapidly diminishing in number in those waters.

In Sweden it is estimated that the fish population in 20,000 lakes has been wiped out or is in a danger zone. When the acidity level of the water rises, fish fail to spawn and even adult fish may die because the fish's ability to regulate the transfer of dissolved materials to the gills is weakened.

In cold areas air pollutants in winter accumulate in the snow, whence they are released when the snow melts. In this way soil and water acidity may suddenly increase.

In Finland the effects of acid rain on nature have been very little studied. These studies, however, already demonstrate that their significance is obvious.

A large number of lakes have been found in Finland whose acidity levels have ominously risen. Valuable fish and crayfish have disappeared or are disappearing from our lakes. Researchers stress the fact that sprinkling the lakes with lime is no solution to the problem either since that, on the other hand, might cause rank vegetation. The only real possibility is to cut down on sulphur discharges and the volume of acid.

"The use of natural gas as a source of energy is locally a good solution as far as sulphur dioxide is concerned. If the gas pipeline was brought into Helsinki, we could noticeably clean the air," researcher Hakkinen maintained.

Lead Is a Pure Poison

Aside from industry, traffic is a significant polluter in the cities. Carbon monoxide, nitrogen oxides and carcinogens, or cancer-causing substances, and lead get into the air via exhaust gases. Pollutants produced by traffic chiefly affect people who already suffer from certain heart and respiratory diseases.

When children's playgrounds are located on streets with heavy traffic, these poisons may also seriously affect healthy children.

"Lead is a pure poison in the sense that human beings cannot use it for anything. Through the air lead passes into dust and snow, in which case children may swallow it in large amounts. Lead that is suddenly absorbed causes stomach pains, for example," neurologist Raimo Sulkava said.

Serious studies on the long-term effects of lead on the decline in children's performance level have not been made in Finland. On the other hand, several studies have been made abroad and there is reason to suppose that the results of these studies are applicable in Finland too.

Lead is a central nervous system poison that affects the brain. According to a U.S. study, it is harder to teach children whose teeth have a high concentration of lead to speak and their power of observation is less than is the case with those whose teeth contain less lead.

"In a study recently made in West Germany, it was shown that lowering the concentration of lead in gasoline significantly affected the lead content in the blood of people living alongside main roads. As a result of this alone, the lead content dropped to half of what it was. Completely lead-free gasoline is already on sale in the United States. And in Sweden they plan to switch entirely to unleaded gasoline by 1985. I see no reason why it would not be possible to do the same thing in Finland," Sulkava felt.

Law Is a Poor One

The new air protection law goes into effect in October. They have been hemming and hawing over it some 7 years now. And the result is nearly nil. Its greatest shortcoming is poor control over discharges of industrial plant pollutants. The local board of health or corresponding municipal officials are responsible for supervision, but this is based on the industrial plants' own reports. And ordinary citizens will not be allowed to interfere in matters concerning discharges either.

"The new law will not bring to our country systematic air protection. It does not even guarantee publication of the results of research. Nor have the latest recommendations on pollutant concentrations been decided on yet. We may assume that Medical Board recommendations are acceptable to industry. In Finland, however, we should consider the results of studies on the effects [of pollutants] that have been made abroad and the health of risk groups must be particularly ensured," Antti J. Hakkinen commented.

According to Hakkinen, money invested in air protection will be returned in terms of savings in national health efforts. According to him, the best thing about the air protection law is that it will make possible systematic research, assuming that sufficient funds are appropriated for that purpose.

And lastly Hakkinen puts his faith in group activity on behalf of clean air by the people who live in districts affected by polluting plants. As for Sulkava, he pointed out that occurrences of different kinds of allergies have tripled in just a few years time in Finland. This situation cannot be explained in any other way but as being due to the fact that more and more people live in the cities where pollutant concentrations are harmful to their health.

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AERIAL SPRAYING OF FORESTS RESUMES AFTER TWO YEAR SUSPENSION

Helsinki HELSINGIN SANOMAT in Finnish 22 Jun 82 p 25

[Article by Jyrki Iivonen: "Underbrush War To Begin in August"]

[Text] Ardent environmentalists will once again have an opportunity in August to acquire good experience in public demonstrations since after a 2-year pause the aerial spraying of underbrush will be resumed. It is expected that there will be lively encounters, in which the skin of the environmentalists will be tanned with MCPA and 2.4 D-solutions.

The wood processors will now stand firm behind their immemorial right to spray. Retreating could now result in new, more expensive prohibitions on forest improvements.

It is calculated that approximately 380,000 hectares must be sprayed annually for the care and maintenance of seedlings. Two-thirds of this area will be sprayed mechanically. The surface area to be sprayed from the air is estimated to be approximately 30,000 hectares, which corresponds to an area approximately the size of the City of Espoo.

The area to be covered by aerial spraying this summer will be significantly smaller than the original goal, a full 6,000 hectares. Of this amount the proportion of privately owned forests is one-fifth and 80 percent belongs to corporations.

Even this year the ministry sent a similar appeal to the forest industry, the central forestry boards, and the Forestry Administration, but it received a response only in the Forestry Administration.

Local municipalities and governments have petitioned for a prohibition on aerial spraying over an area of approximately 2,500 hectares, but the majority of the petitions were denied because the arguments were not specific.

Public Opinion Negative

In the discussion on underbrush the forest industry has come out the loser. It has not been able to answer local governments, fanatic biologists, and the old women in Hattuvaara, whose cries of distress have turned so-called public opinion against aerial spraying.

For the forthcoming struggle the forest industry has assembled an arsenal of arguments, by which it can demonstrate that chemical herbicides are safe and above all economical.

In preventing the growth of underbrush aerial spraying is without a doubt the safest and least expensive procedure. Clearing a hectare of underbrush with a clearing saw costs at least 400 markkas and the operation must be done at least twice. With aerial spraying an area of seedlings is covered with one spraying, and the cost per hectare does not exceed 300 markkas.

A Small Area

Foresters for the forest industry emphasize that the area to be sprayed is small. However, they do not intend to give up since otherwise the generally inaccesable area would not be sprayed at all.

It is also a question of principle. If they give in now, the next prohibition may cost the forest people even more.

Safety Guaranteed

Those supporting aerial spraying have provided assurances that the chemical solutions are not dangerous to humans. They disperse in a few weeks under natural conditions.

For the purpose of demonstrating the safety of the solutions a certain forester in the Tehdaspuu Corporation went so far as to drink a glass half full of the solution. Later the poor fellow was placed on a disability pension -- indeed for completely different reasons.

If words are not effective, then those protecting the interests of industry will generously show areas where chemical herbicides have succeeded just as in the illustrated pamphlets.

Pine seedlings stand upright like tin soldiers on Enso-Gutzeit's property in the parishes of Suonenjoki and Leppavirta. Only here and there does one see a withered alder. Such good results were achieved for the reason that a few years ago no objections were made to aerial spraying. Next to the clearings belonging to Tehdaspuu, alders, poplars, and birch grow unimpeded on the property of the Hackman Corporation. Now clearing work is accomplished only by hand with a clearing saw.

Opposition Is Surprising

The fuss being raised by the environmentalists seems incomprehensible to the foresters. Is it necessary to pick mushrooms in just those areas which have been treated with chemical herbicides? Are not untreated areas sufficient since in any event nine out of ten blackberries rot in the woods anyway? Why are there no objections to spraying from a tractor even though with this procedure the herbicides descend from approximately the same height as from an aircraft?

Industry naturally regrets the fact that the spraying must be accomplished during the best berry season in August. However, there are no other opportunities. If the herbicides are sprayed earlier, then evergreen seedlings would also die. If operations are postponed until later, then the substances would no longer have any effect on deciduous trees.

"We Are Talking About Poisons"

Professor Pekka Nuorteva, chairman of Helsinki University Environmental Protection Institute, points out that the discussion on underbrush is also an information war. "Industry is talking about herbicides and the protection of plants, we are using the word poison since they are poisons," he notes.

According to Nuorteva the goal of the environmentalists is to prevent the use of all poisons in forestry. Then industries would have to clear the underbrush around seedlings mechanically, which is exceptionally expensive. This, on the other hand, would change logging procedures since in extensive logging areas underbrush is the worst obstacle to logging operations.

Nuorteva has serious doubts about the harmlessness of present herbicides. "The 2.4.5 T used in Vietnam was supposed to disintegrate in 3 weeks, but residue could be found even after a year. Substances are always assumed to be harmless until proven otherwise. This is an incorrect premise.

"In principle, mankind has failed if it must resort to poisons. In forestry we should not be building such a chain of measures in which poisons play an organic role," states Nuorteva.

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COUNTIES ASK CENTRAL GOVERNMENT TO HALT AERIAL SPRAYING

Helsinki UUSI SUOMI in Finnish 30 Jun 82 p 3

[Article: "Plans to Spray 6,000 Hectares of Underbrush from the Air; 24 Municipalities Petition for Ban on Spraying"]

[Text] Twenty-four municipalities, chiefly in Keski-Suomi and Ita-Suomi, have petitioned the Ministry of Agriculture and Forestry for a ban on aerial spraying of underbrush in their areas. The ministry will decide on the spraying of poisons in the near future.

The Finnish Environmental Protection Union does not consider it impossible for the situation to escalate to the point of open conflict in many districts because public opinion is vehemently against spraying of the underbrush in the provinces.

"Over 6,000 hectares are slated for aerial spraying and [the ministry] has been requested to ban the spraying of over 3,000 of them," forester Aulikki Kauppila of the Forestry Department of the Ministry of Agriculture and Forestry said.

The northernmost of the municipalities that have requested a ban on spraying are Utajarvi and Kajaani. Several of the municipalities, such as, for example, Vartsila, Polvijarvi, Heinavesi and Kannonkoski, are located in Ita-Suomi and Keski-Suomi.

"This year we plan to subject all told 50,000 hectares of timberland blazed for cutting to chemical spraying," Kauppila noted.

He remarked that there was no spraying last year and that the Forestry Ministry will not be spraying national forests at all this year either. Mainly the lumber companies want the forests to be sprayed and private contractors will do the job.

Specific Grounds Required

The underbrush will be sprayed on the basis of the herbicide law. According to the law now in effect, the Ministry of Agriculture and Forestry makes decisions on the banning and restricting of herbicide use at the request of the municipality.

The law has been in effect since 1978 and the ministry has often denied municipalities' petitions.

"The municipalities give their reasons for wanting aerial spraying to be banned. The municipalities often maintain that we have an agreement in principle. That is, however, not enough; there have to be specific grounds," Kauppila noted.

Information secretary Ismo Tuormaa of the Finnish Environmental Protection Union asserts that over the years opposition to underbrush spraying has come to a head, especially after the 1980 conflict in Hattuvaara near Ilomantsi.

Tuormaa emphasized that the Environmental Protection Union under no circumstances instigates conflicts.

"However, public opinion in the provinces is so strongly opposed to underbrush spraying that it would be no wonder if conflicts did arise," he added.

"The responsibility lies with the political decision-makers. Economically speaking, it is a question of marginal issues. Putting a stop to underbrush spraying will not bring down the forest economy," Tuormaa said.

Veikko Junttila, the assistant municipal secretary of Kajaani, said the the Kajaani Municipal Council had reached an agreement in principle last spring in which they asserted that brush clearing could be taken care of otherwise than using poisons without incurring unduly high economic burdens.

"How better could they argue in their petition anyway? In any event, the ministry would end up granting a permit to spray," he grinned.

"Berry picking constitutes a fair source of income for the local population and, every time they spray, the berry picking area is reduced," he said, but pointed out that there is no protest movement in sight.

The town of Heinavesi has petitioned for a rejection of plans to subject an area of about 160 hectares to aerial spraying. The last time the town petitioned for a ban on spraying was in 1980, but the petition did not succeed.

"In the petition they referred to the agreement in principle reached by the municipal council at the end of the 1970's, in which they opposed sprayings, appealing from the points of view of employment and of the danger of polluting an area in which livestock is raised," Heinavesi municipal secretary Hannu Raninen said.

"If the permit to spray is issued, health officials will observe the situation. Nothing else can be done," he said.

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FOREST, LUMBER INDUSTRIES HALTING AERIAL SPRAYING

Helsinki HELSINGIN SANOMAT in Finnish 9 Jul 82 p 8

[Article: "Aerial Spraying Allowed To Be Repeated; Lumber Industry Consents to Backing Peace While a Law Is Drafted"]

[Text] This summer the lumber industry, the private forest economy and the Forestry Ministry will not combat the underbrush with aerial spraying. The matter was decided on Thursday during discussions led by Ministry of Agriculture and Forestry Taisto Tahkamaa.

The committee, which considered the economic importance of spraying, had already in early spring recommended that aerial spraying be halted, but the reaching of a decision stretched out for a long time due to lumber industry opposition.

This year they had planned to subject an area of about 6,000 hectares, about 5,000 of which belong to lumber companies, to aerial spraying. The areas to be sprayed are chiefly located in Pohjois-Karjala, Pohjois-Savo and Kainuu.

The sprayings are still subject to consideration by the municipalities. However, 27 of the 50 municipalities in the areas to be sprayed have already requested the Ministry of Agriculture and Forestry to ban aerial spraying of the underbrush.

The Ministry of Agriculture and Forestry has no information on the remaining municipalities because they do not have to report their granting of permission to spray to the ministry. According to department head Tapio Korpela, the ministry will next go about determining how many municipalities have consented to aerial spraying. The Lumber Industry Association, the Forestry Ministry and central forestry boards, to which most of the forests belong, will not, however, engage in aerial spraying.

The lumber industry and forest owners said that they had reached a decision to grant the ministry a period of peace for it to draft a new herbicide law. According to them, an atmosphere must be created in which a law can be drafted without emotional discussion about the environment.

Lumber Industry Association director Yrjo Hassi in particular demanded a businesslike approach to discussions. He accused the University of Helsinki Environmental Protection Institute, and especially its chairman, Prof Pekka Nuorteva, of showing a lack of objectivity in its distribution of information. According to Hassi, public opinion has for no reason at all been turned against underbrush herbicides. "It's strange that herbicides change into poisons when they are sprayed from an airplane," Hassi said.

New Law in Perhaps a Year

No one wants to start a new brush war aver a few thousand hectares. A couple of years ago a group of environmental protectionists opposed the Forestry Ministry's taking a stand on aerial sprayings in areas to be sprayed. The matter was later thrashed out in court. This year the Finnish Environmental Protection Union has, among other things, predicted open conflicts if aerial spraying is again carried out.

A new herbicide law, under which municipalities would be given more power of decision, is now being drafted by the Ministry of Agriculture and Forestry. They are striving to get the new law into effect as early as late summer when next year's sprayings are planned.

According to the present law, at the request of the municipality the ministry may ban or restrict aerial spraying if the underbrush can be destroyed at a reasonable cost by other means or a restriction is otherwise advantageous from the standpoint of environmental protection and the local population.

Under a new law, the use of herbicides would be more of a local matter, even though the decision would still be submitted to the Ministry of Agriculture and Forestry for approval.

In the opinion of the Ministry of Agriculture and Forestry, aerial spraying is a necessary technique in caring for the more difficult areas planted with sapling forests. The ministry feels that, if it is abandoned, opportunities for berry picking and mushroom gathering will not increase, nor will they be able to significantly create new jobs either.

According to the lumber industry, annual losses in growth yield would amount to millions of cubic meters if spraying is completely abandoned.

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REPORT URGES SUBMITTING ALL CHEMICALS TO TEST BEFORE USE

Helsinki HELSINGIN SANOMAT in Finnish 2 Jul 82 p 11

[Article: "Product Control Committee Tightens Supervision: Report Must Be Made on New Chemicals"]

[Text] In the report it has submitted, the Product Control Committee proposes that reports on new chemicals should be submitted to the Medical Board before these substances are made available for use.

The committee proposes a stricter chemical law instead of the present poison law, one which would cover all chemicals and international regulations, their prior inspection and prevention of their detrimental effects on the environment.

The committee, which is headed by Government Councillor Risto Jaakkola, also proposes that the Council of State endorse the list of substances that are dangerous for the environment. A list of chemicals dangerous to people's health should also be kept.

The Council of State could ban or restrict the sale, use, manufacture and importing of chemicals dangerous to the environment and people's health.

Obligation to Report on New Substances

The importer or domestic manufacturer of a new chemical would always have to submit a report on the product to the Medical Board. The chemical could not be made available for use until 45 days after submission of the report. Chemicals which were not sold, manufactured or used prior to 18 September 1981 would be considered to be new chemicals.

The report would have to include information on the manufacturer or importer, the composition of the product, its identification and effects, among other things, as well as on studies made to eliminate the latter. This research would have to be conducted by the manufacturer or importer of the product. Already-available test results that have been proven to be reliable would also meet this requirement.

Official inspectors would have to check on those laboratories in which the products are subjected to testing. The committee estimated that from 60 to 80 such substances, which would require testing, are annually made available for use in Finland. The cost of research varies from 70,000 to 400,000 marks.

Approval for Products for the Protection of Trees

According to the proposal, biologically active chemicals intended for the protection of trees, the finishing of textiles, the saturation of paper and the inhibition of mold could not be introduced for use without the approval of a technical air control institute.

The permission of the control institute would be required for the manufacture of chemicals that are dangerous to people's health and the environment. The handling and extensive storage of industrial chemicals would have to be reported to the institute. Accident reports on serious accidents occurring in connection with the handling of dangerous substances would also have to be submitted to the control institute.

New Classification

In the committee's proposal, poisons are reclassified. Instead of first and second-class poisons, poisons would be divided into extremely poisonous, poisonous and substances harmful to people's health. The classification is modeled after the one used in Europe.

The committee estimates that from about 60,000 to 80,000 chemicals are in use in Finland. It proposes that a provision governing the different chemical registers be added to the law, whereby data would be collected in conformity with the requirements of the job safety law, the safe use notification system and the chemical law via the system for reporting.

The most comprehensive registers are now to be found with the Job Safety Commission and at the HYKS [expansion unknown] Poison Center, in each of which there is information on about 20,000 chemicals.

The committee proposes that the control system conforming to job safety laws be supplemented so that a so-called chemical report on products would have to be submitted to the Medical Board. This mandatory report would affect chemicals other than those used on the job which are dangerous to people's health or the environment as well.

Along with the new law we might also reexamine permits that have been granted earlier for special reasons.

Among other things, drugs, food, fertilizers, explosives and the transportation of chemicals, which would continue to be regulated by special laws, would not be covered by the new chemical law.

Discharges and their harmful effects would also be regulated on the basis of special laws such as, for example, the water and waste-handling laws.

Differing Opinions

There are three differing opinions in the committee report. Jointly, the members of the committee are of the opinion that the Interior Ministry be proposed to oversee the application of the new law and they urge that supervision be transferred to a new chemical control bureau which would be established within the Ministry of Environment.

Representatives of industry on the committee feel that the proposals are too strict and view them as endangering industry's ability to compete. The workers, on the contrary, would like to see even stricter regulations and control go into effect.

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STUDY OF AIR POLLUTION DURING 1970'S ANALYZES 'ACID RAIN'

Helsinki HUFVUDSTADSBLADET in Swedish 5 Jun 82 p 9

[Article by I. L.]

[Text] A study of the air in Finland during the 1970's was presented yesterday at the Meteorological Institute. It shows that on a year-round basis, the air is quite good. But daily measurements reveal large variations in air pollutants. A brief but intense period of acid precipitation can disturb an ecosystem that has already reached a critical stage. It is important to be attentive to such local peaks.

Incidentally, all the rain that falls in Finland is now acidic, even in Kevo up in the far north. And mercury pollution is even in the air over the sea.

Studies of the air will become the second most important task for meteorologists when the new clean air law goes into effect this fall. The study just completed is expected to provide an important statistical basis for work in the future. Antti Kulmala, Ph. D., who headed that study, is himself a meteorologist. At his disposal is a staff of coworkers representing several different branches of science: graduate engineer Alec Estlander, statistician Liisa Leinonen, chemist Tuija Ruoho-Airola, and mathematician Tapani Saynatkari. To a large extent, they designed their own measuring instruments under Estlander's leadership. They were even able to export one apparatus.

The overall picture of air in Finland is not bad--it is about the same as that in Sweden and Norway and better than that on the continent. But it is important to observe local and short-term variations, and Dr Kulmala points out that they can be picked up only by monitoring the air continuously.

Even if they do not show up in long-term statistics, they can have devastating effects locally.

All Precipitation Is Acidic

There is no longer any "neutral" precipitation in Finland. Rain and snow are acidic and have an acidifying effect on the soil and the lakes. The low pH values from the early 1970's remained low through the end of the decade.

Gases and suspended particles were studied. Roughly speaking, the poisonous gases in the air consist of two-thirds sulfur dioxide and one-third hydrogen compounds. Sulfur dioxide is usually singled out as the chief villain, but the researchers say that they have been taking an increasing interest in hydrogen compounds.

The mean values for sulfur dioxide in Finland's air are as follows: 2 to 4 micrograms in Kevo; 10 to 15 in Jokioinen; 45 in Helsinki; 50 to 60 in Espoo (the measuring station is in Kilo); and 50 to 70 in Tampere. The risk to health is said to begin at 70 mg [measurements here and below as published].

The air in Tampere provides proof that by using district heating, smoke filters, and purifying measures, it is possible to reduce the sulfur dioxide level. In the early 1970's, the air in Tampere contained 100 mg of sulfur dioxide. Now it is down to or below the health risk threshold even at its worst.

The greatest concentration of mercury pollutants in the air was found, as expected, at the measuring station in Jokioinen, which is located in a typical agricultural district, but they could also be recorded on Sjal Island and in Kokar. Mercury exists even in the sea air.

Exports and Imports of Dirt

As is known, air pollutants are carried to Finland from the continent by air masses. But it is also important to remember that we ourselves export half of our own output, according to the researchers.

We ourselves are responsible for most of the pollution in the air. Imported dirt dominates only in the precipitation.

The air pollutants were studied at 11 so-called background stations. None of them, therefore, is located in the heart of a large residential or industrial center, but rather at some distance away. The Meteorological Institute's future plans call for studying the air in densely populated areas and preparing the relevant statistics. That would help the cities in their own air quality control and provide a basis for local clean air measures.

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LEAD, OTHER POLLUTANTS EXCEED NORMAL RANGE IN HELSINKI

Helsinki HELSINGIN SANOMAT in Finnish 17 Jun 82 p 9

[Article: "Pollutants Exceed Standards in Helsinki Center"]

[Text] Air pollutants caused by traffic on many streets in the center of Helsinki are greater than the recommended amounts considered suitable for human respiration by the Central Medical Board.

The Institute of Air Science has been studying air pollution caused by traffic for a couple years in eight locations for measuring air pollution in the area of the capital city. According to the results published on Wednesday traffic is the most significant source of air pollution on busy streets and poorly ventilated streets in the center of Helsinki.

The amounts of carbon monoxide measured on Frederik Street, Alexis Kivi Street, and Lonnrot Street were nearly equal to or even exceeded the amounts allowed by the Central Medical Board. At the Helsinki Street location the amount of carbon monoxide measured was already perceptibly less.

The Central Medical Board has recommended hourly values of 500 micrograms per cubic meter of air for nitrous oxides. On Lonnrot Street this amount was exceeded perceptibly. On Helsinki Street the amounts of nitrous oxide encountered during the winter were almost that of the recommended level. The amounts on Asema Road in Vantaa and Merituuli Road in Espoo were already half of the recommended amounts.

200 Kilos of Lead Per Day

Lead emitted into the air of the capital city almost completely originates from traffic, states the study. On a weekday 200 kilos of lead are emitted into the air.

In Japan the permissible level of lead is 1.5 micrograms per cubic meter of air per day. At the Lonnrot Street location the highest daily levels clearly exceeded the levels permitted in Japan.

According to the study lead is usually emitted as small particles, which can easily penetrate deep into the respiratory system. On streets with heavy traffic the air also contains larger lead particles, which have mixed with dust stirred up from the surface of the street.

In the study it is estimated that 90--95 percent of carbon monoxide emissions are traffic related. More than half of the nitrous oxides and hydrocarbons is caused by traffic.

A gas-operated motor vehicle emits more than 10 times as much carbon monoxide into the air as a diesel-operated vehicle. Also the amount of nitrous oxides and hydrocarbons emitted by gas-operated vehicles is approximately double that of a diesel-operated vehicle. The particle-like emissions from the exhaust gases of gas-operated motor vehicles contain lead while, on the other hand, the exhaust emissions from diesel-operated vehicles contain many more polycyclic aromatic hydrocarbons, which have been confirmed to be carcinogenic.

Researchers Raimo Kartastanpaa and Eino Lumme of the Institute of Air Science, who conducted the study, point out the importance of winds and other weather conditions in the fluctuation of traffic-related air pollution. The amounts of pollutants fluctuate perceptibly according to the winds. In addition, seasons are important. In the spring, in particular, there is an exceptionally large amount of dust from traffic in the air around Helsinki.

Butterflies No Longer Becoming Darker

Overall air pollution has not increased in the metropolitan area of Helsinki since the middle of the 1970's. This conclusion has been reached by researchers studying butterflies at the University of Helsinki.

A study accomplished by a group under the direction of Docent Kauri Mikkola was also published on Wednesday. It has been confirmed that certain species of butterflies are excellent barometers of air pollution. As pollution increases, traditionally dark butterflies increase and lighter ones decrease. A similar report was made a full 5 years ago.

According to the new butterfly study pollution is no longer increasing in Helsinki, rather it has even decreased as the result of remote district heating, estimated Mikkola. However, butterflies have disclosed a new smaller area of pollution in the Suomenoja area of Espoo. This pollution has been caused by the Suomenoja Power Plant, which has been in operation for 5 years.

Calculated on the basis of the color of butterflies the area of pollution in the center of Helsinki extends from the northeast sections of Lauttasaari and from Lapinlahti to the neighborhoods of Vanhankaupinginlahti. All of Helsinki's largest power plants in Salmisaari, Hanasaari, and the waste treatment plant in Kylasaari are located in this area.

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PAPER URGES LAW TO CONTROL LEAD FROM EXHAUSTS

Helsinki HELSINGIN SANOMAT in Finnish 19 Jun 82 p 2

[Editorial: "Lead Content of Gasoline Should Be Reduced"]

[Text] Air pollution has become a troublesome problem for large cities as well as other more extensive areas also. Attention has been fixed on the exhaust fumes of motor vehicles, which contain substances detrimental to people. For example, lead emitted into the air in urban areas originates according to studies almost entirely from the burning of gas.

Not as much serious attention has been given to the detrimental effects of exhaust gas in Finland as in many other countries. The reason has simply been the relatively small number of motor vehicles. Now, however, the Institute of Air Science has determined lead contents in the air around the capital city and has observed that in some locations the amount of lead exceeds the recommended levels considered suitable for human respiration by the Central Medical Board. Thus in the Helsinki area there is more pollution than there should be from the point of view of human health.

Indeed, the result of the study is no suprise. The danger of lead caused by exhaust fumes has been studied before and on the basis of this study guidelines have been issued for the cultivation of food crops in the vicinity of busy highways. Also on the basis of this same study a clarification is being made of the risk of lead poisoning in children's parks in the capital city.

In the worst case lead can cause poisoning, but it is also known that it can be detrimental to the human central nervous system. According to a certain study an accumulation of lead in the organism, on the other hand, can have a detrimental effect on the intellectual development of children. It is remarkable that all the detrimental effects of lead are not even yet known.

Since a definite lead hazard does exist, it is astonishing that stipulations concerning the maximum levels of lead content in gasoline have not been issued. The Finnish producer of gasoline, Neste Corporation, has, indeed, on its own initiative reduced the amounts of lead it uses. They now correspond to the average international level. In spite of this, they are perceptibly higher than the standard levels in certain large European countries.

For example, the lead content in gasoline produced by Neste is nearly threefold that of the amount allowed in the Federal Republic of Germany. According to research there the restrictions on lead imposed 6 years ago have resulted in a reduction of lead content in the air to half of the previous amount. A corresponding maximum amount of lead in gasoline has been instituted in Sweden also and in certain other countries.

The reduction of lead content in gasoline in Finland has been brought before parliament several times. However, the results have been meager. The government's argument has been that reducing the content of lead in gasoline would increase Neste's expenditures and would thus be reflected in the price of gasoline. An even flimsier argument is that on the basis of the present study there is no reason in Finland to reduce lead content in gasoline at a faster rate than in Europe in general. Also Neste has announced that it does not intend to reduce the amount of lead before a more economical alternative to it can be found.

Thus the most important obstacle to reducing the amounts of lead in the air is money. Neste's production costs would increase by approximately 150 million markkas in a year if the amount of lead were to be reduced to the levels in other countries.

Since it is known that lead is harmful to human health and that it can be eliminated from gasoline without unreasonable expenditures, the implementation of restrictions seems to be incomprehensibly difficult.

The air protection law that will go into effect in the fall will provide an opportunity to limit the amount of lead in gasoline. The government should take measures to reduce air pollution and not just think about the interests of domestic oil refining, as what seems to have happened in the past. The air protection law was legislated for the reason that economic interests would not be given priority over human health.

In discussing the detrimental effects of exhaust gases it must be emphasized that lead is not the only danger lurking in the air. Fuels contain a significant amount of other compounds, the detrimental effects of which have been evaluated to be even greater than the risks caused by lead. The reduction of these compounds also must now be emphasized in accordance with the spirit of the air protection law.

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SERIOUS POLLUTION IN SARONIKOS GULF

Athens ELEVTHEROTYPIA in Greek 21 Jun 82 p 8

[Excerts] Industries of high pollution potential such as alcohol and liquor distilleries, paper mills, chemical industries, basic metals foundries, tanneries, slaughterhouses, hotels, hospitals, etc. dump into the Saronikos 559,000 cubic meters of refuse every day and the urban pollutants emptied by the Akrokeramos of Keratsini surpass the 500,000 cubic meters daily. They are generated permanently or periodically by 59 locations.

Measuremnts taken by the PERPA [Pollution Control Program of the Atehns Area] in 1976; 1977; 1978; 1979 for microbe indicators in only 73 areas, from Oropos up to Kalloni, which cover the shoreline of beaches of the Argosaronikos and the South Evoikos Gulf, have shown that the concentration of pollutants coincides with the over-concentration of industrial and urban activity. In the related study it is explained that the quality of the water is not only determined by the colobacteria [eserichia coli] and colobacteroids but also by other microbiological, natural, chemical and biological parameters which constitute the essential criterion for the evaluation of the degradation sequence.

Elevsis, Aspropyrgos, Mandra, Magoula. The Thiasion Plain, a plain free to industrial immunity. Cement plants, refinery, shipyards, brass foundries, etc. several hundreds of small and large factories poison the air, the soil the sea. The problem has become international and Elevsis has become famous the world over as the Greek Seveso [Italy]. Despite all this, the murder continues. Decisions made by the New Democracy are going to be implemented today. They are in the process, that is, of:

Establishing in Aspropyrgos the quarries, the tanneries, three dumps, the illuminating gas plant and the mineral oils plant of Vardinogiannis which will process and recycle used oils which are extremely dangerous. Regarding this plant, there was an inquiry in the Chamber of Deputies and the Ministry of Industry replied that, in that particular area the location of high pollution industry is permitted, therefore, the Vardinogiannis firm is given the opportunity to more than double the area of its installations, However, an on-the-spot survey using the map of the ministry as a guide, revealed that this installation is being located in an area where high pollution industries are not permitted. On the eve of the World Environmental Day, the mayor of Elevsis, Mr. Mikh. Levendis, emphasized at an all-popular rally and march towards the sea that:

The Kouramanis plant whose operation was halted by the Ministry of Industry can resume its operations. The decision can be overturned by the Council of State.

Two quarries are going to be located at Xirorema and Villiari despite the fact that recently the deputy minister of Industry, Mr. Pitsiotis, stated on television that quarries would be closed in Attiki.

The defense industry PYR-KAL proceeds with investments of hundreds of millions of drachmai despite the fact that the minister of defense has given assurances that its 550 stremma lot would be converted into a park.

The announcement of the results of the inquiry by WHO on the effects of pollution on children and pregnant women of the city has been delayed while reports claim that they are very disquieting and for this reason have not been released.

How does the Ministry of the Merchant Marine face the problem? What specific measures has it taken for the protection of the sea in view of the fact, moreover, that Minister Stathis Giotas has repeatedly shown that he is sympathetic to ecological matters?

We must note here, that, in contrast with the other ministries where we made specific inquiries, the YEN [Ministry of Merchant Marine] willingly and on time participated in our investigation. To the first question they answered that:

In the context of its responsibility it has given orders to the Port Authorities and monitors their compliance enforcement, has prepared and forwarded for publication to the National Printing Office, a ministerial decree with rules and prerequisites for the building of floating facilities for the collection of refuse from ships.

Regarding ships which spill oil, discharge slops from dirty ballast (tank cleaning) at sea and are illegally allowed into port, etc. the YEN states that, according with the port regulations in force, it is permissible in certain maritime areas for the loading and unloading of fuels. If this were not permitted, an impasse would be created, but the provisions of the law are applied with the same severity both to the vessels which load/unload liquid fuels and to the installations (refineries) which store and process petroleum products (Editor's Note: Perhaps this does not always happen. For example, a relative regulation allows a certain number of ships in the Gulf of Sousaki of Korinthia, but we have often seen with our own eyes that the regulation is violated). From all over the country come charges that ships which are laid up pollute the waters dangerously. How does YEN take care of this matter?

Its answer:

The laid up ships are the result of difficult economic coincidences which have hit the bulk transportation particularly hard. A significant number of ships which engage in this trade has been forced to inactivity and their remaining in this condition will depend on the course of the reversal of the slump of the international economy. The Greek merchant marine which consists of 93 percent of bulk carriers, is directly paying the consequences of this crisis and their being laid up is an unfortunate consequence.

"Our country, as a maritime nation which is conscious of the tremendous national and economic significance of its merchant marine, had to permit the laying up of ships which are imobilized. The anchorages of these ships have been designated in areas which insure safety, a short distance from inhabited areas for the safety of the watchmen of the ships and their provisioning, etc. It is not true that the laid up ships pollute the waters because they are exhaustively inspected both before the laying up and during the time this lasts in order to minimize the effects of provoked pollution.

Fines of 28 Million

What will the YEN do for the protection of Greek waters from pollution? What laws and decrees are in force today? The ministry's answer is as follows:

Steps have been taken with the Piraeus Port Authority so that it would install additional facilities for the collection of ship's refuse. A survey was made of the means and material of pollution cleanup at the disposal of the shoreline private installations and the proper use of them will be made part of the relative data in order to estimate their sufficiency. At the same time, a bill is being processed trough the Chamber of Deputies for the ratification of the MARPOL International Agreement 73/78 "for the avoidance of marine pollution by ships," its enforcement which is estimated will improve significantly the quality of the marine environment because it covers all types of pollution by vessels, petroleum products, chemicals, etc. A bill for the ratification of the International Agreement (Fund 71) "for the institution of an international fund for the restoration of the damages by petroleum products " is also being processed.

In addition:

Bill 1969 is in the planning stage and about to be introduced for ratification "for the intervention in the open seas, in the event of threat of pollution by chemical substances. Relative to the protection of two areas particularly susceptible to pollution, Agion Theodoron and the Pagasitikos Gulf, the YEN says that there is being prepared for publication a presidential decree which provides for the establishment of regional stations for the fight against pollution within the port authorities of Isthmias and Volos.

The laws in force today are:

Legislative decree 4529/62 "on the prevention of marine pollution by petroleum." (Ed. Note: prevention is a mandatory need and, other effects aside, it saves us from financial losses because, according to the UN, the cleanup of one barrel of oil at sea costs one thousand dollars.)

Legislative decree 187/78 "on the Code of Public Maritime Law." Law 743/77 "on the protection of the marine environmentand the regulation of related matters." Law 314/78 "on the ratification of the Brussels International Agreement." Law 855/78 "on the ratificationof the Barcelona International Agreement." Law 1147/81 "on the ratification of the International Agreement of 1972 "on the prevention of pollution of the sea by dumping of refuse and other matter by vessels and aircraft." Sanitation decree E1b/22/65 "on the disposal of refuse of installations," and a number of ministerial decrees issued for the enforcement of the above.

The Ministry of Merchant Marine informs that, despite the preventive measures in force, there are instances of non-compliance and the violation of the legislative decrees. Therefore, both it and the port authorities are forced to apply repressive measures which consist of the imposition of sanctions against the culprits. The sanctions, according to the law are criminal, administrative and disciplinary. Thus:

During the period 1 Nov 81 to 13 May 82 the port auhtorities imposed fines for a total of 27,935,000 drachmai. In essence, 129 violations were ascribed to ships with fines totalling 9,465,000 drachmai and 61 violations by installations which dispose of their wastes in the sea with fines for a total of 18,470,000 drachmai being imposed.

9731
CSO: 5000/5333

ANTI-POLLUTION MEASURES IN NORTHERN GREECE

Athens RIZOSPASTIS in Greek 20 Jun 82 p 2

[Text] During a conference which took place Friday at the village of Agios Pandeleimon of Florina Nome at the initiative of the Nome authorities, representatives of tens of mass organizations demanded radical measures for the protection of the lakes Bergotis and Petron from the continuing pollution of wastes dumped by industries in the area.

The speakers emphasized that there is continuing pollution of the two lakes with immediate consequences on their hydro-biological wealth.

The industries of fertilizers of Ptolemais "AEVAL" and the tannery which operate in Amyntaion were accused of being the fundamental causes and generators of pollution by the speakers and special scientists.

Participating in the conference were the governors of the Nomes of Florina, Mr. K. Kritsinis; of Pella, Mr. G. Adamopoulos, and of Kozani, Mr. Khalatsis. Also the professors of the Veterinary and Agri-Forestry School of the APTh [Salonica Aristoteleion University], Messrs. Kylikidis and Mouroukidis, municipal council chairmen, representatives of the TEE [Technical Chamber of Greece], and a representation of the Florina Nome Committee of the KKE headed by its secretary, Comrade Mitsos Khambidis.

In his speech, Comrade Khambidis emphasized among other things that the measures which must be taken by the government must be of a substantial nature and aim at curbing the immunity of the industries which destroy the environment. He added that the solution is not to be found in the continuous cooperation with the polluting industries, but in the constant struggle of mobilization by the inhabitants.

At the end of the conference a series of proposals was voted to:

Found an ecological institute in the area.

Force the industries to comply with the existing legislation and to build treatment installations or to improve the already existing ones.

Prohibit the operation of the "AEVAL."

9731
CSO: 5000/5333

BRIEFS

KAVALA FIRM FINED--A fine of 1.3 milliom drachmai was imposed by the Port Corps of Kavala on the "Haliburton" Company because it polluted the sea waters with xylene. Xylene is used for petroleum drilling and the leak (four times) took place when the substance was being loaded at the port of Kavala for the "Votengo" floating rig. [Text] [Athens I KATHIMERINI in Greek 15 Jun 82 p 2] 9731

ELEVSIS FIRM FINED--A fine of 300,000 drachmai was imposed by the Port Corps of Elevsis on the manager of the "Oinotrans" distillery for marine pollution by wastes. For the same reason a fine of 100,000 drachmai was imposed on the manager of the "Owens" glassworks. [Text] [Athens TO VIMA in Greek 15 Jun 82 p 8] 9731

OIL RIG POLLUTION--The organic and inorganic toxic substances "hit" by the floating rig "Dan Baron" at a depth of 3,000 meters in the waters near Katakolon are considered dangerous to living organisms. As was reported, the polluted area threatens, in addition to fish, the bathers in the neighboring areas. [Text] [Athens AKROPOLIS in Greek 18 Jun 82 p 8] 9731

PETROLEUM POLLUTION--Four oil slops of limited size were observed in the last three days in the marine areas of Kavourion, Lavrion, Kalamaki and at Kalous Limenes of Irakleion, Crete and were caused by various ships. The first two were spotted by aircraft and were reported to the Ministry of Merchant Marine by the control tower of the Ellinikon Airport, the third by a yacht and the last by the Central Port Authority of Irakleion. The pollution at Kalamaki was cleaned up by the special cleanup unit of the Piraeus Central Port Authority while at Kalous Limenes the cleanup was undertaken by the township of Pigadakia. The other two were dispersed by currents. The authorities, with the help of witnesses, are on the tract of the violators. [Text] [Athens TO VIMA in Greek 22 Jun 82 p 7] 9731

CSO: 5000/5333

FJORDS BEING SUBJECTED TO INCREASING POLLUTION

Oslo KLASSEKAMPEN in Norwegian 13 Jul 82 p 9

[Article by Heide Egede-Nissen: "Norwegian Fjords--Full of Filth"]

> [Text] How great is the pollution of our fjords? And what is being done? To get an answer to this we must go to the National Pollution Inspection. They have several places in the country where over a long period of time they have conducted pollution surveys. The fact is that many Norwegian fjords and coastal areas are seriously polluted with environmental poisons. In several places it is recommended not to eat the fish or bathe because of health reasons.

The Norwegian fjords are some of the most characteristic features of our land. No other country can show such blue, deep and fantastic fjords as Norway. On postcards they look clean and fresh, but under the surface another reality exists. Unfortunately the pollution has become so great a problem for our fjords that several organisms and bottom areas are threatened. Although the emissions to a number of fjords have been reduced, the conditions are in no way satisfactory, according to the Pollution Inspection.

Rubbish Boxes

The fjords have many uses. Many are good for fishing, bathing, and other outdoor sports. And for many the fjords are the nearest approach to other sea areas. But they are also used as rubbish boxes for human activity. Both community and industrial sewage have for many years been dumped into the fjords--and are still being dumped!

What Are the Facts?

The fjords which have been hit by pollution of one kind or another can be named indiscriminately. The emissions from the lumber industry at Halden have destroyed Iddefjord's ecosystem. Because of the sewage emissions in the Oslofjord the lifegiving oxygen in the deep waters of the fjord is greatly reduced. In the entire Gandsfjord by Stavanger the intestinal bacteria is so concentrated that people are advised not to swim there. The emissions from the gasworks at Sauda Smelteverk have caused the metal level in mussels and seaweed to be abnormally high.

Poison Fish

Beside the Saudafjord the situation in Grenlandfjord in Telemark is characterized as the most critical today. Most of the population lives in Skien and Porsgrunn, where most of the industry is concentrated. Norsk Hydro's magnesium factory on Heroya is the greatest source of environmental poisons. It has actually come so far that the health authorities advise people against fishing in Frierfjord. Concentrations of quicksilver have been found in the fish which were far over the limiting value for fish for consumption. And in spite of investigations and supervision of the fjords the emission of pollutants has not changed much in the past 2-3 years.

What Is Being Done?

The National Pollution Inspection has surveyed the critical areas for a number of years. Investigations and observations have been made regularly, and as results show, conditions require that several actions be taken. In the Oslofjord a new cleaning installation was opened a short time ago. Nearly all the sewage in the Oslofjord is now connected to different cleaning installations. But unfortunately only half of the sewage reaches the cleaning installations. In the Oslofjord it is estimated that the piping network is so bad that about 40 percent of the pollution leaks out and comes directly into the fjord.

At Skien and Porsgrunn a municipal cleaning installation will be built until 1986. That will contribute to an important reduction of pollution in the fjords.

Sneak Pollution

Today we know a lot about the substances which are environmental poisons. The most important environmental poisons are metals, chlorinated organic compounds, fluorine and PAH which is created with all incomplete combustion of organic material. But not all compounds are identified and characterized with reference to chemical construction and properties. The known compounds often make up only a part of the total contents. We can not therefore overlook the possibility that there is sneak pollution, a pollution we do not have control over because it is unknown to us.

Better, But Not Good Enough

It is the private firms which cause the most environmental pollution, according to the Pollution Inspection. What can be done to improve conditions?

At Sauda Smelteverk the firm erected a cleaning installation in 1977, said environmental engineer Bruborg from Sauda. "The loading was dominated by the gasworks, but now the cleaning effect is 95-98 percent, we are told. When the cleaning installation was purchased it cost 18 million kroner, but we had to have it in order to retain the concession which we had. With the cleaning installation we have no problems with meeting the concession requirement," said Bruborg. But even if the fish have become better, the metal concentration is still not low enough in comparison with the normal value, according to the National Pollution Inspection.

9287
CSO: 5000/2148

LIBERAL PARTY CHIEF ATTACKS GOVERNMENT POLLUTION EFFORT

Oslo DAGBLADET in Norwegian 14 Jul 82 p 2

[Article by Odd Einar Dorum, chairman of the Liberal Party: "Pause for Thought in Environmental Policy"]

> [Text] We can now observe a number of worrisome signals that environmental policies will suffer from the Conservatives' tax promises. The most important examples are:

1. Measures to combat noise are being impeded. The most important measures against traffic noise are being postponed. This comes from the government's report to the Storting. This is happening in spite of strong directives drawn up by a unanimous Municipal and Environmental Protection Committee. On this point the government has neglected to follow up a unanimous Storting committee which has requested that fees be levied on noisy products in order to finance measures to fight noise. Such fees are levied in the Netherlands, but it can not happen in Norway. Here we push the problems ahead of us. Those who must pay are some of the most exposed groups in the big cities.

Chemical

2. The sitting government has contributed to further delay of regulations on chemical substances and products by one year because they could not follow up a unanimous Storting committee demand that Norway should put into effect its own measures in this area and not wait for EC measures. In the same area dealing with chemicals and poisons the government has pushed the problem of regulations sanctioning poisonous substances ahead of it, so that it is also postponed beyond the previously stated desires of the Storting.

Pollution

3. Pollution. On this point the government has proposed weakening the pollution law. The most important weakness is that the authorities will now abandon trying to draw up guidelines and norms for what shall be acceptable limits for emission of poisonous substances and products. Presumably that

can have a positive effect because it could enable authorities to draw up the main guidelines as they wish. But when that is compared with the lack of will to strengthen the staff of the department, and the Conservatives' handling of the environment department's budget in the past year, a cause for concern is detected. If this also continues in the coming year's budget, the weakening of the law and the absence of Conservative Party will to apply manpower and resources, this will lead to the environmental side suffering for the tax promises of the Conservative Party.

Precipitation

4. Acid rain. The same day that a cabinet member was quoted in the Norwegian newspapers with the encouraging statement that progress is now being made in the work against acid rain, there was an NTB [Norwegian Telegram Bureau] report from a Stockholm conference which indicated that little has been accomplished. It does not help environmental protection policies nor does it solve serious problems when central politicians try to place a fog bank over important political questions.

The examples I have mentioned indicate that environmental policies are also going to suffer for the Conservatives' tax promises. It is to be hoped that in the fall the Storting will reject such a line. We are confronting an issue which is decisive for all those living now and for coming generations, and we can not afford the type of policy which the Conservative Party is now planning.

9287
CSO: 5000/2148

SALT FROM WELLS SEEN POSING THREAT TO ARCHIPELAGO WATERS

Stockholm SVENSKA DAGBLADET in Swedisn 26 May 82 p 10

[Article by Margareta Sandstrom: "Salt in the Wells Threatens the Archipelago"]

> [Text] Foul-smelling drinking water, salty coffee, gardens losing their green color. In the worst case, this is how the future may look for the people in the archipelago if they do not watch out.

The use of water is increasing steadily. Researchers' prognoses indicate that by 1990 the ground water supply may be overexploited, causing salt water to flow in.

The archipelago counties have suddenly awakened to the need to master the water problem, but they lack outlines and support in the legislature and want a survey of the water supply.

"We are seriously concerned and have issued warnings on all levels, almost all the way to the government," say the two ground water geologists Buster Sund and Goran Bergman of the Institute for Air and Water Research (IVL).

"One is now aware of the risks in all the archipelago counties. The surveillance has increased, but there is no support for action in the legislature. Every landowner is free to drill his own well."

Overdraft Dangerous

"Ground water is like money in the bank. One cannot withdraw more than one puts in," Goran Bergman explains. "Ground water does not lie in some inexhaustible reservoirs below ground level. Every spring and fall the reservoirs are filled."

"Normally, ground water pressure in the archipelago is higher than that of surrounding salt water. Thus fresh water can be produced even in the beach areas.

Serious Damages

But if one withdraws too much ground water the pressure is changed. A negative pressure suction is produced and salt water can pour into the ground water reserve. Such damage is almost impossible to correct.

"Before, when people were content to pump or carry water by hand, each household used 100 liters a day on the average. Today's electrical pumps have increased the daily per capita use of water dramatically to 150 liters. Statistically this means that each house withdraws as much water as flows into the ground, that is 400 liters a day."

"Besides permanent residences, use of vacation houses is becoming more frequent. By 1990 we project a withdrawal that is greater than supply," says Goran Bergman.

"We need a survey of the water supply," says the Varmdo County Board of Health director, Lennart Toresjo. "We have asked for funding, but not yet received any."

"Salt water has already penetrated into the wells on Vindo and now lately out on Tistronskar. At the moment there is not much building. That gives us breathing space."

There are problems even in Norrtalje. "We do not know how large the water reserves are," says Lennart Persson of the Board of Health. "It is on principle a private matter, as long as the law is not changed. The water question is part of environmental planning, but we lack proper guidelines. Legally there is an inconsistency between civil law and county planning. We would like to see the water law revised."

Spreading

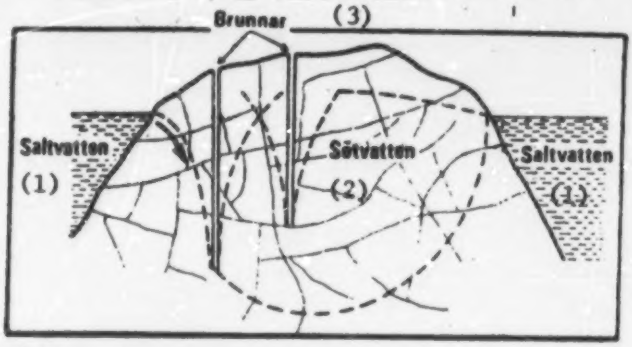
At the Swedish Geological Research Institute (SGU) in Uppsala the geologist Helgi Lindewald is rushing his data survey of "Salty Ground Water to Sweden."

"Since 1976 there has been a law that all well drilling in the country must be reported to the SGU. Yearly, it is a question of 8,000 wells. One percent--that is, 80 wells--are reported to produce salty ground water," says Helgi Lindewald.

"The amount of chloride in the ground water varies from region to region," Helgi Lindewald explains. "Usually the amount is between 10 and 60 milligrams per liter. If the amount passes 300 milligrams, the so-called taste limit, the ground water is considered salty."

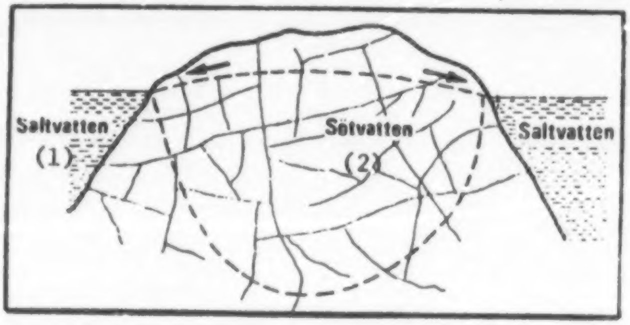
"The amount of chloride in the 780 wells which are included in the survey is between 300 and 7,000 milligrams per liter. The extent of salty ground water is larger than expected. Some very salty wells can have their sources in underground salt water lakes, left over from the ice age."

"It is very clear that the water in the archipelagos is changing from fresh to salty, probably due to excessive water use in the vacation areas," Helgi Lindewald cautions.



KEY:
(1) Salt water
(2) Fresh water
(3) Wells

The fresh water level has dropped in a funnel-shaped manner around rock-drilled wells on an island surrounded by salt water. The funnels change the balance between fresh and salt water. It becomes possible for salt water to penetrate into the fresh water supply and mix with it. One liter of 2 percent salt water will make 7 liters of fresh water salty.



KEY:
(1) Salt water
(2) Fresh water

Diagram of fresh water supply on an island surrounded by salt water. The cracks in the rock contain the water. The pressure of the fresh water is higher than that of the sea water; the ground water level slopes toward the sea level. This way sea water is prevented from mixing with fresh water. From the report "Salt Water Penetration in Rock-Drilled Wells."

9843
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23 August 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 365

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 365

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WORLD HERITAGE, POLITICS INVOKED AS BARS TO TASMANIA DAM

Heritage Recommendation

Melbourne THE AGE in English 24 Jun 82 p 3

[Article by Rosslyn Beeby]

[Text] The World Heritage Bureau has recommended that south-western Tasmania be included in the World Heritage List, an international register of important natural and cultural areas.

The bureau, a United Nations organisation, has expressed concern that the area is threatened by the Tasmanian Government's proposed Gordon-below-Franklin hydro-electric project, and has urged the Prime Minister, Mr Fraser, to conserve the south-west wilderness as "an area of world significance".

The bureau met in Paris this week to consider an urgent appeal by the Australian Conservation Foundation to place south west Tasmania on an emergency list of endangered world heritage areas.

In a message to Mr Fraser, the bureau has called for a halt to the hydro-electric dam development and for National Park boundaries to be extended to include the Prince of Wales and Dennison Ranges, the Spires and the Walls of Jerusalem National Park in the protected World Heritage site.

The director of the Australian Conservation Foundation, Dr. Geoff Mosley, said yesterday the bureau's recommendation imposed a strong obligation on the Federal Government to prevent any environmental damage to the area.

Dr Mosley said the Federal Government would be in contempt of the World Heritage Convention if it did not intervene to save Tasmania's south-west wilderness. Australia would then face international condemnation and possible expulsion from an international agreement which, in 1975, it was one of the first countries to ratify.

The director of the Tasmanian Wilderness Society, Dr Bob Brown, said the World Heritage recommendation meant the campaign to save Tasmania's wild rivers was now a matter of world concern.

The area which has been nominated for the World Heritage list includes the South-west National Park, Franklin-Lower Gordon Wild Rivers National Park and Cradle Mountain-Lake St Clair National Park.

Mr Gray was unavailable for comment yesterday. He had flown to Canberra to attend the Loans Council meeting where the Tasmanian Government is expected to seek Federal finance for the $453 million Gordon-below-Franklin development.

Wilderness Society Election Plans

Perth THE WEST AUSTRALIAN in English 28 Jun 82 p 14

[Text]

CANBERRA: Candidates in marginal Federal electorates whose parties do not oppose the Gordon-below-Franklin hydroelectric scheme will face strong opposition from the Tasmanian Wilderness Society at the next election.

A weekend meeting in Canberra of society representatives from all States decided to include lobbying in marginal seats as part of the stepping-up of its national campaign to prevent the Franklin being dammed.

The society's national liaison officer, Mr Chris Harris, said yesterday that wilderness-society branches would be set up in other marginal electorates to match those already established in five marginal Victorian seats.

The society would wait until nearer election time to see which party had the most acceptable policy towards the dam, work on which was expected to proceed immediately.

If two parties contesting a seat had similar no-dams policies the society might then advocate a vote against any other candidates.

Mr Harris said the key message to come from the weekend meeting was that the fight to save the Franklin was far from over.

CSO: 5000/7557

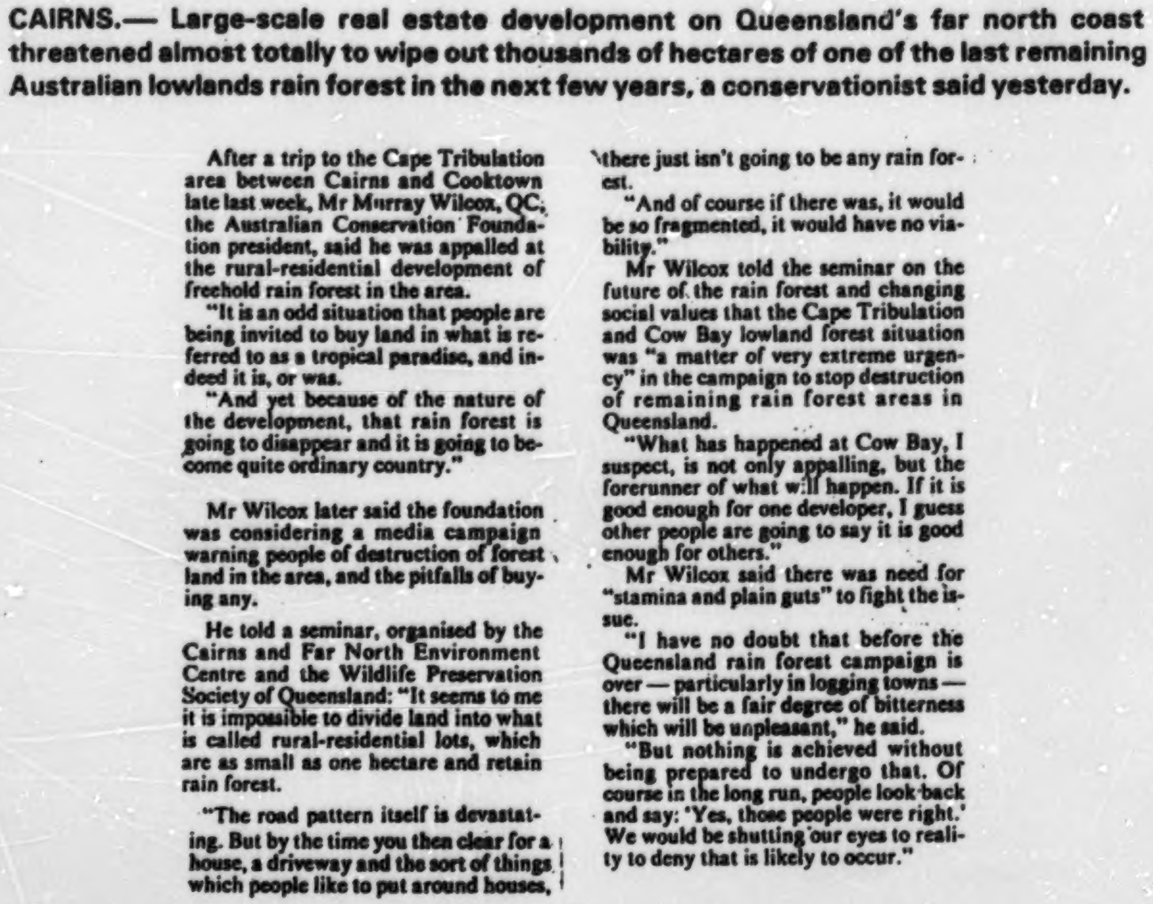
NORTH COAST RAIN FOREST DECIMATED BY GROWTH IN HOUSING

Queensland Warning

Brisbane THE COURIER-MAIL in English 21 Jun 82 p 11

[Article by Gregg Borschmann]

[Text]



CAIRNS.— Large-scale real estate development on Queensland's far north coast threatened almost totally to wipe out thousands of hectares of one of the last remaining Australian lowlands rain forest in the next few years, a conservationist said yesterday.

After a trip to the Cape Tribulation area between Cairns and Cooktown late last week, Mr Murray Wilcox, QC, the Australian Conservation Foundation president, said he was appalled at the rural-residential development of freehold rain forest in the area.

"It is an odd situation that people are being invited to buy land in what is referred to as a tropical paradise, and indeed it is, or was.

"And yet because of the nature of the development, that rain forest is going to disappear and it is going to become quite ordinary country."

Mr Wilcox later said the foundation was considering a media campaign warning people of destruction of forest land in the area, and the pitfalls of buying any.

He told a seminar, organised by the Cairns and Far North Environment Centre and the Wildlife Preservation Society of Queensland: "It seems to me it is impossible to divide land into what is called rural-residential lots, which are as small as one hectare and retain rain forest.

"The road pattern itself is devastating. But by the time you then clear for a house, a driveway and the sort of things which people like to put around houses, there just isn't going to be any rain forest.

"And of course if there was, it would be so fragmented, it would have no viability."

Mr Wilcox told the seminar on the future of the rain forest and changing social values that the Cape Tribulation and Cow Bay lowland forest situation was "a matter of very extreme urgency" in the campaign to stop destruction of remaining rain forest areas in Queensland.

"What has happened at Cow Bay, I suspect, is not only appalling, but the forerunner of what will happen. If it is good enough for one developer, I guess other people are going to say it is good enough for others."

Mr Wilcox said there was need for "stamina and plain guts" to fight the issue.

"I have no doubt that before the Queensland rain forest campaign is over — particularly in logging towns — there will be a fair degree of bitterness which will be unpleasant," he said.

"But nothing is achieved without being prepared to undergo that. Of course in the long run, people look back and say: 'Yes, those people were right.' We would be shutting our eyes to reality to deny that is likely to occur."

Lack of Forestry Funding

Brisbane THE COURIER-MAIL in English 21 Jun 82 p 11

[Text] CAIRNS.— Lack of money is hampering the Forestry Department's inadequate plantation program in north Queensland, according to a senior forestry officer.

Mr Jim Bardesly, a District Forester based at Atherton, told the Future of the Rain Forest seminar at Cairns the replanting program was "probably too little, too late".

Mr Bardesly said: "I probably shouldn't be saying this, but we can't get enough funds to sustain our existing pines plantations program at the level we would like to have it."

He had been asked why foresters were not harvesting native tree plantations on a longer rotation basis, perhaps every 40 to 50 years.

"The big thing against it, I suppose, is just profit and loss," he said.

"Conifers produce higher marketable volume than almost any hardwood species."

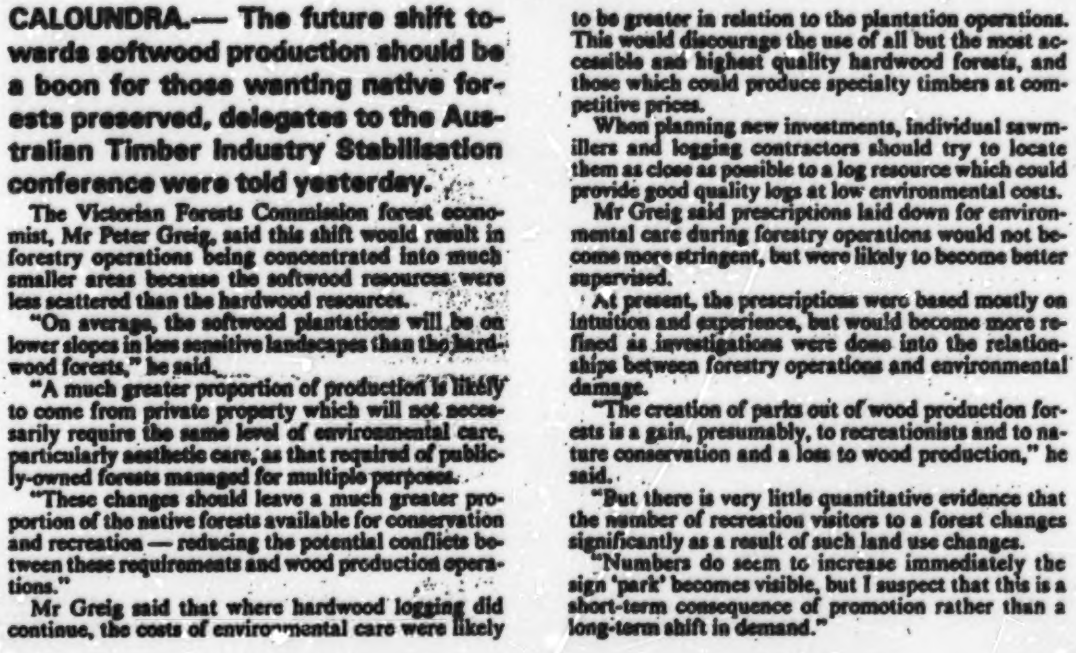
A world authority on rain forest, Dr Len Webb, an Honorary Fellow in the Australian School of Environmental Studies at Griffith University in Brisbane, made a plea for what he called "social forestry".

CSO: 5000/7557

SHIFT TO SOFTWOOD SEEN AS BOON TO SAVING FORESTS

Brisbane THE COURIER-MAIL in English 25 Jun 82 p 11

[Text]



CALOUNDRA.— The future shift towards softwood production should be a boon for those wanting native forests preserved, delegates to the Australian Timber Industry Stabilisation conference were told yesterday.

The Victorian Forests Commission forest economist, Mr Peter Greig, said this shift would result in forestry operations being concentrated into much smaller areas because the softwood resources were less scattered than the hardwood resources.

"On average, the softwood plantations will be on lower slopes in less sensitive landscapes than the hardwood forests," he said.

"A much greater proportion of production is likely to come from private property which will not necessarily require the same level of environmental care, particularly aesthetic care, as that required of publicly-owned forests managed for multiple purposes.

"These changes should leave a much greater proportion of the native forests available for conservation and recreation — reducing the potential conflicts between these requirements and wood production operations."

Mr Greig said that where hardwood logging did continue, the costs of environmental care were likely to be greater in relation to the plantation operations. This would discourage the use of all but the most accessible and highest quality hardwood forests, and those which could produce specialty timbers at competitive prices.

When planning new investments, individual sawmillers and logging contractors should try to locate them as close as possible to a log resource which could provide good quality logs at low environmental costs.

Mr Greig said prescriptions laid down for environmental care during forestry operations would not become more stringent, but were likely to become better supervised.

At present, the prescriptions were based mostly on intuition and experience, but would become more refined as investigations were done into the relationships between forestry operations and environmental damage.

"The creation of parks out of wood production forests is a gain, presumably, to recreationists and to nature conservation and a loss to wood production," he said.

"But there is very little quantitative evidence that the number of recreation visitors to a forest changes significantly as a result of such land use changes.

"Numbers do seem to increase immediately the sign 'park' becomes visible, but I suspect that this is a short-term consequence of promotion rather than a long-term shift in demand."

CSO: 5000/7557

COUNCIL IN NEW BID TO STOP EFFLUENT WITH 24D, 245T

Perth THE WEST AUSTRALIAN in English 24 Jun 82 p 45

[Text]

THE Cockburn City Council wants the State Government to take immediate action to halt the disposal of effluents by a Kwinana factory producing herbicide containing the chemicals 24D and 245T.

At its meeting on Tuesday night the council decided to write to the Government asking for an immediate stop to the dumping of 24D and 245T into the water table.

The council is concerned at the method of disposal that the Minister for Water Resources, Mr Mensaros, has told Chemical Industries (Kwinana Pty Ltd) to use as an interim measure.

Earlier this month the company was given six months by the Minister to develop a satisfactory method of effluent disposal and a further six months to have it fully implemented.

Pit

It was told to stop its current practice of discharging liquid waste into an open pit and to come up with an acceptable alternative.

In the meantime, the company was instructed to separate its process effluent from cooling water and inject it through a bore into the lower layer of salt-water aquifer.

The council fears that effluents containing 24D and 245T could leak into the fresh-water aquifer.

The council also resolved to write to the other councils in the area seeking their support for its stand.

The chairman of the Effluent Licensing Advisory Panel, Mr John Abbott, said yesterday, that the Government was as anxious as the council that the discharge into the aquifer should cease.

The only other option was to close the factory.

He was convinced that the effluent, which was heavily concentrated, would sit at the bottom of the salt-water aquifer.

It could not rise to the level of the fresh-water aquifer.

CSO: 5000/7557

AUSTRALIA

BRIEFS

RIVER SALINITY PROBLEM--FOUR of the State's most important rivers contain salt above the level recommended by the World Health Organisation as being fit for human consumption. Salinity in once fresh rivers is worse than that experienced anywhere in the world, including North American, accordin gto a Public Works Department researcher. The worse affected are the Swan-Avon, Blackwood, Murray and Collie. Though remedial steps and research are being undertaken by four government departments, the CSIRO and scientists at the University of WA and the WA Institute of Technology, there is no simple solution. The Minister for Conservation and Environment, Mr Laurance, said yesterday that it was difficult to see what steps could be taken to modify agricultural practices in the Avon and Blackwood catchments to reduce their salinity enough to make them usable as a water supply. Reforestation would affect such a big proportion of farmed catchments that it was entirely impracticable. The problem resulted from the extensive clearing which created a thriving agricultural industry. "This industry contributes substantially to the wealth and well-being of the whole community," he said. "With present agricultural systems, it is difficult to avoid salinisation. Any form of land development is bound to result in some environmental change." Mr Laurance said that there was an increasing awareness in the community of the importance of controls on land use to minimise salinisation. [Hugh Schmitt] [Text] [Perth THE WEST AUSTRALIAN in English 19 Jun 82 p 3]

CRACKDOWN ON LAND SPOILERS--A TOUGHER line against people who despoil WA's remote beauty spots has been foreshadowed by the Minister for Conservation and the Environment, Mr Laurance. Mr Laurance issued a warning yesterday to tourists, fishermen and prospectors about leaving rubbish behind them and cutting vehicle tracks through dunes, pasture and bush. He said he preferred persuasion and education to get people to do the right thing. But if they persisted in damaging the environment he would have to invoke the powers available under Section 164 of the Land Act. That could mean a fine of $1000 for anyone caught dumping rubbish or running a track through crown land. In addition to any fine, the guilty party could be liable for the cost of removing rubbish or necessary restoration work. [Excerpt] [Perth THE WEST AUSTRALIAN in English 23 Jun 82 p 42]

CONSERVATION DISCUSSION PAPER--A CALL for wide public discussion on conservation has been made in Perth. A national conservation strategy based on agreed principles could make it easier to resolve future conflicts between conservation and development, said Mr M. Shevlin of the Federal Dapartment of Home and Environment's task force. But ideas from all sections of the community were essential for the strategy's success, he said. Mr Shevlin visited Perth to explain a national conservation strategy for Austrlaia. "We are not concerned only with preservation," he said. "Conservation is primarily people." The Federal Government has circulated a discussion paper, "Towards a national conservation strategy." It was based on the recommendations of a national seminar in Canberra last year and will be open for public discussion until September 15. A paper based on this debate will be prepared by December for circulation before a second national conference next February. The final draft will be presented to the Premiers' conference next June for endorsement. Plans for a national conservation strategy developed from the publication two years ago of a world conservation strategy prepared by the United Nations environment programme and the World Wildlife Fund. It showed that development could be sustained only by conserving the living resources on which it depended and by the integration of development and conservation. These included saving rain forests, controlling salinity, recycling non-renewable resources and improving water use. [Perth THE WEST AUSTRALIAN in English 24 Jn 82 p 47]

CSO: 5000/7558

BRIEFS

FOREST POLICY CRITICIZED--Wellington (PRess Assn)--Government plans to merge the Lands and Survey Department and the Forest Service have been criticised by the Native Forest Action Council. The council president, Miss Gwenny Davis, likened the proposal to a merger between the shark and the kahawai. She said the Forest Service would dominate the merged organisation. "People who are mostly interested in the use of land for commercial purpose are suddenly going to gain a big influence over land use decisions on all publicly owned lands, including national parks, reserves, pastoral lands and most of the Southern Alps." Miss Davis said that there was a great danger that the Forest Service's "crack timber troops" would march into the new structure and take it over from the outset. The Labour Party said the proposed merger raised urgent questions about the Government's intentions. The Labour Party caucus committee on primary production will approach the Minister of Lands and Forests, Mr Elworthy, this week to seek "an authoritative briefing on the whole matter." [Text] [Auckland THE NEW ZEALAND HERALD in English 13 Jul 82 p 3]

WETLAND DRAINAGE OPPOSED--Wellington (PA)--A scheme to turn about 3000 hectares of Wairarapa wetland into farms is opposed by the Minister for the Environment (Dr Shearer). He said yesterday he was personally against the proposed Lake Wairarapa polder scheme which would destroy more of the country's "valuable and rapidly diminishing wetlands." In a statement issued after he had visited the lake yesterday to look at the Wairarapa Catchment Board scheme, he said: "Projects like this are no longer appropriate for the times. Less than 10 per cent of this country's original wetlands now remain and these are under continuous pressure for conversion to farmland." The Wairarapa scheme plans to convert 20 per cent of the lake and adjoining wetlands into 40 farms by means of a polder or dyke. Dr Shearer said it would be fully investigated before any decisions were made. He said the thrust of development in the south Wairarapa should be towards increasing the productivity of existing farmland, "rather than destroying an incomparable wildlife resource." [Text] [Christchurch THE PRESS in English 14 Jul 82 p 2]

CSO: 5000/9074

PROGRAM PROPOSED FOR PEARL RIVER POLLUTION PROBLEMS

Guangzhou GUANGZHOU RIBAO in Chinese 5 Jun 82 p 1

[Article: "Serious Environmental Pollution of Pearl River Delta. Discharge of Guangzhou Industrial Pollutants Urgently Requires Control and Treatment"]

[Text] The correspondent obtained the following from the provincial discussion meeting currently underway in Guangzhou on the relationship between a survey of the seacoast at the mouth of the Pearl River and production. Scientific surveys have shown that except for Hong Kong and Macao, Guangzhou is the largest source of industrial pollutants discharged into the Pearl River Delta area, and treatment and control is a top priority matter.

Environmental scientists centered their surveys within the Pearl River Delta on 14 cities and counties including Guangzhou, Shenchuan, Foshan, Jiangmen, Dongguan, and Shund. Within this 20,000 square kilometer area, thousands of fairly large industrial plants and almost 10,000 production brigade operated enterprises constitute sources for pollutants that have polluted the seacoast along the mouth of the Pearl River. Guangzhou's industries annually discharge more than 684 million tons of effluent in addition to a large amount of domestic sewage making the total amount of damaging materials discharged annually from Guangzhou 7.53 times more than the total amount discharged by the other 13 cities and counties. Analysis of effluent showed the principal seven pollutants of the Pearl River Delta region to be phenol, chemical oxygen consumption,[sic] arsenic, sulfides, cyanides, heavy metals, and pesticides.

The Pearl River Delta is the province's most economically flourishing and most densely populated area; it is also a major commercial port for maritime shipping. Protection and improvement in the environment of the Pearl River estuary, and accelerated control over existing sources of pollution holds major significance. The scientific workers proposed the following pollution control measures: First was stringently to control the total quantity of industrial pollutants discharged. For Guangzhou's major sources of industrial pollutants, the Guangzhou Paper Plant, the Guangzhou Nitrogenous Fertilizer Plant, the Zhujiang Paper Plant, the Guangzhou Overseas Chinese Sugar Refinery, the Guangzhou Steel Plant, the Guangzhou Petrochemical Plant, The Guangzhou Chemical Fiber Plant, and the Guangzhou Agricultural Pesticide Plant, drastic measures must be taken to innovate technologies, replace equipment, and to think of ways in which pollution can be controlled. Second, the effluent treatment system projects for the 10 large sources of pollutants in Guangzhou on which construction has already begun should be mounted at once and additional special funds allocated to advance the date of project completion. Third is doing a good job of planning patterns on the Guangzhou segment of the river. For plants that pollute seriously or greatly, treatment of pollutants should be particularly strict, and no more such plants should be permitted to be built within or around the water source protection area. Fourth is strict control over ship discharges. This entails the establishment and perfection of an environmental monitoring organization for Huangpu Harbor and Guangzhou Harbor to strictly control discharge of pollutants by ships regularly entering and leaving the harbors.

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CSO: 5000/4056

ACTION TAKEN TO PREVENT POLLUTION OF DONG JIANG

Guangzhou GUANGZHOU RIBAO in Chinese 19 Jun 82 p 1

[Article by Yuan Zhouzhu [5913 0719 3796]: "Provincial Government Allocates Funds To Set Up Dong Jiang Water Monitoring Network. Prevents Pollution of Water Sources and Protects People's Health"]

[Text] In order to keep the waters of the Dong Jiang clean, the Provincial People's Government recently allocated special funds to permit the building of more environmental monitoring stations along both banks of the river to form a monitoring network for the Dong Jiang water system.

The Dong Jiang is presently the source of water for use in daily life and in industrial and agricultural production for the residents of Guangzhou and Hong Kong; it is also the source of water for drinking and industrial use of the broad masses of people who live along both banks of the river. Protection of the waters of the Dong Jiang is a powerful desire of the broad masses of the people. For this reason, the Provincial People's Government last year promulgated the "Provincial Regulations on Dong Jiang Water System Protection," which required all levels of the people's government and all units along the river to carry out this task in earnest. All-around Dong Jiang water system environmental protection work includes the following: All units discharging wastes into the Dong Jiang water system may not discharge such wastes without approval of environmental protection departments. All stacking of equipment along the banks of the river must likewise be approved by environmental protection departments. Ships, wharves, warehouses, and oil storage depots are forbidden to discharge wastes directly into the water system. Management of the discharge of wastes from cities and towns is to be intensified. Effective measures must be taken to enhance protection of headwater forests and river bank protection forests on both banks of the river so they will not be cut down. All communes and brigades within the river basin must use pesticides and chemical fertilizers sensibly, and must prevent them from being washed into the river.

The building of the Dong Jiang water system monitoring network will provide both timely and accurate data on the state of changes in Dong Jiang water quality, and will provide scientific data for the launching of pollution prevention and control studies pertinent to the adoption of technical countermeasures and formulation of environmental protection plans for protection of water sources.

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CSO: 5000/4056

SOME SHANGHAI POLLUTION PROBLEMS AIRED

Shanghai WEN HUI BAO in Chinese 26 Jun 82 p 1

[Article: "Why Do Attitudes on Pollution Control Differ at Two Plants at the Same Place in 'Three Pollutions' Sensitive Area. When Serious Thought is Given and Measures Implemented, Residents Are Happy; When Treated Lightly and Management Is Poor, Masses Have Many Complaints"]

[Text] A few days ago the correspondent visited the Hetian district in Zhabei where the residents enthusiastically praise the Shanghai Polyester Fiber Plant for its consideration toward residents in having conscientiously controlled environmental pollution. At the same time they criticize the Shanghai No 1 Chemical Dyeing Plant for its poor management, which has resulted in the escape to the outside of large quantities of harmful gases to the impairment of the health of residents. Recently the district government sent individual notices of commendation and criticism to these two plants.

In Heitian District dwellings are packed closely together and industrial plants are concentrated. Many plant buildings neighbor residences, and the people call this a "three pollutants" (waste water, waste gas, and industrial residue) sensitive area. The Shanghai Polyester Fiber Plant and the No 1 Chemical Dyeing Plant, both of which are part of the chemical industry system, are located in this area. Formerly the Shanghai Polyester Fiber Plant daily discharged large quantities of boiler smoke and ash, plastic dust, and irritating gases, which seriously polluted the environment. The residents make up a jingle about this plant as follows: "The polyester plant is a lousy plant that puts out dust like 'snowflakes' that cause suffering for surrounding residents. When you wash rice or do laundry, you have to open an umbrella, and when it is stifling hot, you do not dare open a door or window." At that time the residents regularly protested to the plant and demanded that the plant move. Mutual relations were extremely tense.

During the past 2 years, this plant's leaders have put control of the "three pollutants" in an important position, putting themselves in the place of the residents. The secretary and plant manager regularly go to the homes of surrounding residents to take a look around, carefully listen to views, and learn through personal experience about pollution dangers. After returning to the plant, they act vigorously to make technical improvements and organize forces to manufacture all kinds of new dust elimination equipment to solve the problem of smoke and ash emissions from high smokestacks. They have also brought under control the glittering DMT powdery dust that used to fly all over the air, annually recovering 20 tons of raw materials. In the realm of prevention of toxic gas emissions and the elimination of noise, they have done much. They have also planted trees and flowers in open spaces, effecting great improvements in both the internal and external plant environment, and the public is quite content.

On 27 March this year, residents went to the plant to report that smoke and ashes were again fluttering down. The plant manager and other personnel concerned immediately went to residences to gain an on-site understanding of the problem and to discover the actual circumstances. They carefully checked their equipemnt, but were unable to find any defects. Finally they discovered that accumulated ashes at the bottom of the smokestack had not been promptly removed. On the 30th, the plant resolutely decided to shut down the boilers to remove the ashes. The single day's work stoppage cut output value by 100,000 yuan and profits by 10,000 yuan; nevertheless, this plant adhered to proceeding from the welfare of the residents; it would rather incur losses itself than offend the residents. The workers worked until dawn of the second day removing a total of 40 tons of accumulated ashes. Recently the plant again revised its envrionmental regulations making specific people responsible for managing equipment, cleaning it regularly, and inspecting and repairing it periodically.

A few days ago when the correspondent visited the polyester fiber plant, he also walked around the surrounding residents' homes where he saw five or six old retired workers drinking tea, reading, and chatting at a lane hall. They said that formerly during the summer it was either being covered with dust from head to toe or being gassed, and they never thought that they would be able to sit so serenely and enjoy the coolness. Now the plant's leaders go once or twice every month into the lanes to listen to the people, and once or twice each year they invite the residents to the plant for a meeting where they discuss control of pollution together. It really takes a change of attitude to have a change in environment.

However, not far away from the polyester fiber plant is the Shanghai No 1 Chemical Dyeing Plant where a pollution accident aroused violent dissatisfaction on the part of residents. Management at the plant was poor and the system of personal responsibility not strict. On 2 May, five operators left their positions in the third phthalocyanine blue workshop one after another and without authorization. As a result some raw furnace oil heated up beyond specifications and a large quantity of gas was emitted polluting the environment. Zhabei District authorities concerned fined the plant 5,000 yuan for this. Following the accident, the No 1 Chemical Dyeing Plant learned a lesson and set up a three man supervisory unit that patrols on inspection 24 hours a day to check equipment and to check labor discipline. They also installed some simple dust elimination equipment, and some large equipment for control of the "three pollutants" is being designed.

Postscript

Summer has arrived and control of pollution by the "three pollutants" is a problem about which the masses are concerned. Because of problems in this city with pollution by the "three pollutants," fights have broken out between industrial plants and residents. The Shanghai Polyester Fiber Plant and the No 1 Chemical Dyeing Plant provide both positive and negative experiences in how to handle this problem. The key lies in industrial plant units taking a positive attitude and adopting genuine measures to control the "three pollutants," and in listening to the views of surrounding residents, with much publicity conducted to solve problems.

9432
CSO: 5000/4058

OIL TANK LEAK INTO HUANG HE REPORTED

Lanzhou GANSU RIBAO in Chinese 30 May 82 p 1

[Article by Qiu Jing [6726 7231]: "Lanhua Chemical Fertilizer Plant Storage Tank Leaks Oil, Polluting River. Municipal Environmental Protection and Other Departments Studying Stringent Measures"]

[Text] Recently an accident involving a crude oil spill occurred on the section of the Huang He that passes through Lanzhou. The Lanhua Company's Chemical Fertilizer Plant was directly responsible for causing this accident. It resulted because a 10,000 ton oil storage tank did not meet specifications. Formerly a gas storage tank, which had not been repaired for many years, it leaked the oil. The oil went from the ground surface into an underground well and then into an underground pipe and was discharged into the Huang He. The chemical plant lost about 225 tons of crude oil, part of which flowed into the Huang He. After comrades in the Lanzhou Municipal Environmental Protection Office put forward to appropriate personnel in the chemical fertilizer plant their views on the need to take rapid action to halt continued discharge of oil into the Huang He at about 6:00 pm on 11 May, the chemical plant leaders serious attention was not aroused and nothing was done that same night. It was not until the following day at 10:30 am that the spill was stopped, which meant that oil had been discharged into the Huang He for 10 more hours, thereby spreading the pollution and continuing the loss of resources.

The Lanzhou Municipal Environmental Protection Department and units concerned will deal severely with this accidental pollution of the river in accordance with article 32 of the environmental protection law. The Environmental Protection Department also hopes that all entreprenurial units will learn a lesson from this accident.

9432
CSO: 5000/4056

HALT TO UNAUTHORIZED FELLING OF TIMBER DEMANDED

Fuzhou JUJIAN RIBAO in Chinese 15 Jun 82 p 1

[Article by Commentator: "Get to the Bottom of Mountain Forest Destruction and Timber Speculation"]

[Text] During the past several years, the two evil tendencies in Fujian Province of reckless cutting and denudation of mountain forests and speculation in timber have run rampant without being stopped for a long time. What is the root cause? The broad masses of the people believe that the root cause is some management and leadership units, some personnel who share authority over the flow of timber, and some commune and brigade cadres abuse their authority for private advantage, contravene the law and violate discipline causing havoc. The timber cases preliminarily brought to light everywhere recently show that this belief of the masses is correct, and that the situation is far more serious than people originally understood it to be.

In the face of an onslaught of "sugar-coated bullets" from the bourgeoisie, some people blinded by greed have lost the moral character of honesty in performance of official duties that they should have, and have gone so far as to treat as capital the authority turned over to them by the people, engaging in dirty deals with opportunistic timber swindlers in society and degenerating into a state of unscrupulousness. They sell timber that is within plan quotas, issue timber export permits, clear railway cars, and issue felling permits; they accept filthy lucre and tainted goods from speculators and profiteers in timber in return for which they sign certifications, issue clearances, or support "trafficing in the green mountains," and the reckless denudation of forests. They also stir up sentiment for reckless cutting of collectively owned mountain forests, which they cut bare and divide up completely. They also use their official positions to monopolize sales of timber and seek enormous profits. For example, after some power holders in the Longyan County (presently a municipality) Forestry Bureau and in the Yongding County Forestry Bureau separately accepted gifts of color television sets from timber speculators and profiteers in Huian and in Chaozhou in Guangdong Province, they sold large quantities of China fir timber from within plan to them for resale at a profit. After a section chief in the Forestry Protection Section of the Pingnan County Forestry Bureau received bribes, he arranged timber export permits for timber speculators and profiteers. The timber inspection stations at Shangli, Guangze, Chongren, and

Wuping in Jianning cleared the movement of railroad cars smuggling timber after receiving "money to purchase the right of way," and "passage fees." Not only did the deputy station chief at the Nankengzai Forestry Station in Sha County hire workers to recklessly cut mountain forests owned by collectives, and sell timber at a profit, but he also accepted bribes in return for which he indiscriminately issued felling permits resulting in the illegal felling of more than 3,000 cubic meters of collectively owned mountain forests...

Numerous frightening and astounding facts tell us that as a result of their own seriously unhealthy tendencies, some cadres either open wide the door to economic criminals engaged in timber profiteering and speculation, or else become protectors of criminals. Some wallow in the same mire as criminal elements in society, collaborating with them in every way and acting in collusion with them. Just think, in the fight against economic criminals, how can one not investigate the root causes for the destruction of forests, and the speculation and profiteering in timber? Unless this is done, how can this evil wind be stopped? Lenin pointed out that "As long as there is such a thing as corruption, or as long as there is the possibility of corruption, there is no way to talk of governing and there is no way in which to govern," the reason being simple, namely that "every action will come to nothing, and no results can be produced."

We must unflaggingly carry out the pertinent decisions of the Central Committee and the Provincial CCP Committee. In the campaign against economic crimes, those criminals who seriously damage mountain forests and go in big for speculation and profiteering from timber must be seized firmly, and their cases handled with the power of a thunderbolt and the speed of lightening. Particularly in cases involving use of official position and the perversion of justice for bribes, when circumstances are serious and the cadres who have committed the crimes have an abominable attitude, following investigation of the situation, they should be severely punished according to the law. At the same time, diligent reorganization should be carried out in certain units to solve problems of unhealthy tendencies on the part of some cadres, the serious offenders receiving needed party and government disciplinary punishments. Only in this way is it possible to really use laws to manage the forests, to put a stop to unhealthy tendencies, and to protect forest resources so as to make the most of Fujian Province's forestry industry production and permit the multitudes of mountains in the province to contribute their treasures to the building of the four modernizations.

9432
CSO: 5000/4058

FIVE BEIJING AREAS BEGIN SHELTER FORESTS BUILDUP

Beijing BEIJING RIBAO in Chinese 12 Jun 82 p 1

[Article by Sun Wei [1327 5898]: "Five Main Windblown Sand Areas of Suburban Beijing Begin Building of Shelter Forests. Improve Capital's Environment and Conquer Windblown Sand Damage. This Spring 3.82 Million Trees Planted in Fulfillment of 27 Percent of Planned Quota"]

[Text] In order to improve the capital's environment, a comprehensive building of shelter forests was begun this spring in the five major areas threatened by windblown sand on both banks of the Kangzhuang, Nankou, and Yongding Rivers, between the Chaobai and Yanxi Rivers, and on both banks of the Chaobai River. As of May, 3.82 million trees had been planted in fulfillment of 27 percent of planned quotas in the five areas.

These five windblown sand threatened areas involve the seven counties and prefectures of Yanquing, Changping, Daxing, Fangshan, Fengtai, Miyun, and Huairou covering an area of more than 1.5 million mu, which surround Beijing on four sides and directly affect the living environment of the people in the capital and consistently high agricultural production.

In order to bring these windblown sand areas under control rapidly, with the concern and support of the Central Committee, these several counties and prefectures became a part of the national "three northern" shelter forest project. The Municipal CCP Committee and the municipal government made these five windblown sand areas key projects, requiring the building of shelter forests before 1985. They sent municipal forestry inspection teams to work with counties and prefectures in planning and designing, and provided appropriate financial assistance to counties and prefectures for expenses.

As long ago as the fall and winter of 1980, Kangzhuang in Yanqing County and Nankou in Changping County began controls. Both counties set up command posts and organized central government and municipal units within the county, staff and workers in county units, as well as garrison forces to dig ditches and fill in land, and to plant trees to make forests. By this spring, both places had fulfilled more than one-third of planned quotas by afforesting 177 tracts of shelter forests covering an area 250,000 meters in length in which more than 1.9 million trees were planted.

Last winter and this spring, the counties and prefectures of Daxing, Miyun, and Huairou fulfilled planning and design work for Yongding River, and between Chaobai River and Yanxi River. They also put them into effect level by level and actively organized construction. In the Yongding windblown sand area of Daxing County there are 12 communes, 298 production brigades and 780,000 mu of land including more than 300,000 mu of sandy land innundated by the Yongding River. Plans call for the creation of 721 afforested strips and the widening of 112 forest belts over a total of 1,170 kilometers with the planting of 7.1 million trees. In order to turn this plan into reality, during the tree planting season this spring, this county made a key demonstration project out of the four communes of Anding, Banbidian, Weishanzhuang, and Huangcun traversed by the Xianolong River. They set up afforestation leadership teams to carry out centralized preparation of the land, centralized construction, centralized specifications, and centralized planting of trees for the entire project, tree planting quality standards being rather high. The county government promptly convened on-site meetings to give impetus to the building of the entire shelter forest.

9432
CSO: 5000/4058

GOVERNMENT NAMES COMMITTEE TO PROBE TOXIC CHEMICAL LEAKS

Kingston THE DAILY GLEANER in English 16 Jul 82 pp 1, 18

[Text] A COMMITTEE of inquiry was appointed yesterday by the Minister of Public Utilities and Transport, Hon. Pearnel Charles, to investigate the circumstances surrounding the entry of toxic chemicals from the lumber-treatment plant at Wherry Wharf into the public water system.

The committee was set up on the directive of Prime Minister, Rt. Hon. Edward Seaga, that immediate investigations be carried out into Tuesday's incident of feedback of poisonous chemicals into the water supply of the downtown area of Kingston.

Prime Minister Seaga, has also directed that all connections of chemical industrial plants to the public water supply system throughout the island, be inspected and approved by the National Water Commission. This he saw as necessary to reduce or eliminate any recurrence of the nature of the Wherry Wharf incident, Mr. Charles said.

The Committee will be chaired by the Director of the Advisory Unit in the Ministry of Public Utilities, Mr. Roy Alexander. Other members are; Mr. Leo Lawson, Director of the Office of Disaster Preparedness; Mrs. Beverly Miller, National Resources Division of the Ministry; and a representative of the Ministry of Health.

According to the Minister, the committee will not only investigate the Wherry Wharf incident but will report to the Ministry their findings and make recommendations in order to nullify other incidents which prove harmful to the public.

On Tuesday, 2,500 gallons of chemical solution from a Wherry Wharf tank with a capacity of 20,000 gallons accidentally leaked into the water system. The solution was reported by the Managing Director of Wherry Wharf, Mr. Hugh L. Wilson, to contain a small percentage of Arsenic Pentoxide, Copper Oxide and Chromic Acid mixed with water with a concentration of less than one per cent. It is used to treating lumber making it resistant to termites.

Meanwhile the Pharmaceutical Society of Jamaica has expressed its concern for the citizens who have been exposed to chemical contaminated water. In a news release the Society urged persons in the water contaminated area not ignore symptoms of gastrointestinal disturbances, dizziness, restless and muscular cramps which are associated with these toxic chemicals.

The Society further called for the establishment of two poison control centres, one to be located in Kingston and the other in Montego Bay. These centres should be manned by specialist pharmacists. It was noted that one such centre was started in Montego Bay in 1975 but did not become an independent unit.

Jamaica with its largely agricultural economy has experienced its share of fatalities from toxic pesticides and food contamination in recent years, the Society said. However, the Pharmaceutical Society commended environmentalists who have encouraged industrial firms to adhere to the necessary precautions for a healthy environment.

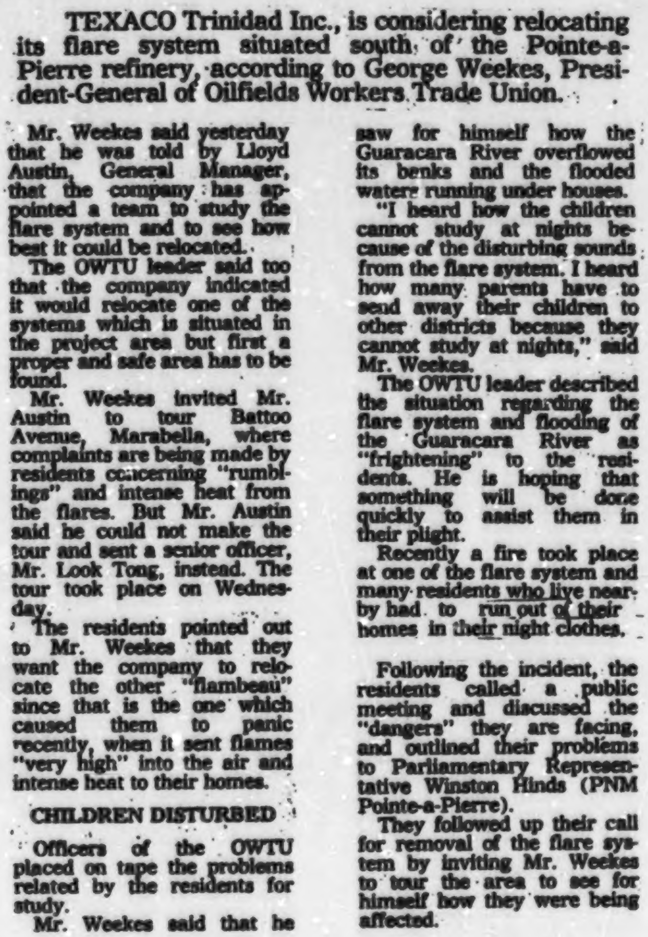
Householders were assured that pharmacists islandwide will readily provide the necessary information on poisoning and will maintain links with doctors and hospitals in the event of acute emergency problems.

CSO: 5000/7554

REFINERY'S FLARE SYSTEM CAUSING ENVIRONMENTAL PROBLEMS

Port-of-Spain TRINIDAD GUARDIAN in English 12 Jul 82 p 3

[Text]



TEXACO Trinidad Inc., is considering relocating its flare system situated south of the Pointe-a-Pierre refinery, according to George Weekes, President-General of Oilfields Workers Trade Union.

Mr. Weekes said yesterday that he was told by Lloyd Austin, General Manager, that the company has appointed a team to study the flare system and to see how best it could be relocated.

The OWTU leader said too that the company indicated it would relocate one of the systems which is situated in the project area but first a proper and safe area has to be found.

Mr. Weekes invited Mr. Austin to tour Battoo Avenue, Marabella, where complaints are being made by residents concerning "rumblings" and intense heat from the flares. But Mr. Austin said he could not make the tour and sent a senior officer, Mr. Look Tong, instead. The tour took place on Wednesday.

The residents pointed out to Mr. Weekes that they want the company to relocate the other "flambeau" since that is the one which caused them to panic recently, when it sent flames "very high" into the air and intense heat to their homes.

CHILDREN DISTURBED

Officers of the OWTU placed on tape the problems related by the residents for study.

Mr. Weekes said that he saw for himself how the Guaracara River overflowed its benks and the flooded waters running under houses.

"I heard how the children cannot study at nights because of the disturbing sounds from the flare system. I heard how many parents have to send away their children to other districts because they cannot study at nights," said Mr. Weekes.

The OWTU leader described the situation regarding the flare system and flooding of the Guaracara River as "frightening" to the residents. He is hoping that something will be done quickly to assist them in their plight.

Recently a fire took place at one of the flare system and many residents who live nearby had to run out of their homes in their night clothes.

Following the incident, the residents called a public meeting and discussed the "dangers" they are facing, and outlined their problems to Parliamentary Representative Winston Hinds (PNM Pointe-a-Pierre).

They followed up their call for removal of the flare system by inviting Mr. Weekes to tour the area to see for himself how they were being affected.

CSO: 5000/7554

BRIEFS

TOBAGO BEACH DESTRUCTION--IT IS NOW time that the public is made aware of a very sad state of affairs that prevails in our sister island, Tobago. On the Western Coast where lie our most beautiful beaches, Grafton Bay and Great Courland Bay, tons of sand are being removed daily for the purpose of constructing roads, etc., by both private and Government organisations. This has been taking place for about two years but within the past year it has been occurring on a much larger scale. We have witnessed throughout the day truckloads of sand being transported openly from these two beaches. If this pillaging continues at this rate for much longer these beaches shall be irreparable. About six feet of sand has been taken from both beaches so that the underlying black rock is now exposed. We have spoken to the authorities concerned but to date there has been no response. Apparently Government does not care about the livelihood of our fishermen, our fragile environment and tourist industry and the citizens are oblivious to this mass destruction despite the fact that they are the ones who drive the vehicles to do such damage. If it is not possible for Government to import red sand from Trinidad for construction purposes and they intend to break the laws and use beach sand, why can they not drive a few extra miles to some remote barren area where the damage would not be so severe instead of our most frequented West Coast and future resort sites? We are now appealing to the Trindiad and Tobago Field Naturlists Club and other organisations to assist us in putting an end to this extensive destruction. [Excerpts] [Port-of-Spain TRINIDAD GUARDIAN in English 10 Jul 82 p 9]

CSO: 5000/7554

PLANTS PROMISE CHEAP AIR POLLUTION MONITORING

Jerusalem INNOVATION in English No 80 Jul 82 pp 5-6

[Text] Haifa--Carefully selected plants have been set out over extensive areas near the Haifa Refineries in a program designed to develop a low cost air pollution early warning system. This work is based on research recently concluded by a team of scientists at the Technion's Faculty of Agricultural Engineering in cooperation with the Hebrew University's Department of Atmospheric Sciences.

The monitoring of potentially dangerous pollutants in the air is now a prohibitively costly process. In order to do a thorough job of information gathering, many pieces of expensive equipment must be installed and skilled personnel employed to collect readings over prolonged periods of time.

The work carried out by researchers here shows that more economical methods are available for the long term monitoring of extensive areas. It has been demonstrated that appropriately chosen plants can provide valuable qualitative information on the diffusion of fluor, ozone and sulphur dioxide in the atmosphere.

Thus the researchers found that a gladiola variety quickly indicated the presence of fluorides in the air. Experimentation showed that visible damage to more than 30 percent of the plants' leaf area or an analysis that yields more than 50 ppm of fluorides in those leaves, indicates concentrations dangerous to man and livestock.

Photochemical smog and ozone can be monitored through the use of certain sensitive tobacco varieties and of pinto beans. The former leaf damage after exposure to concentrations as low as [number indistinct] ppm, while the latter develop dark spots after only four hours' exposure to 0.09 ppm. After exposure during up to two months, the average ozone pollution during that period can be estimated from the amount of damage.

Alfalfa was shown to be a reliable monitor of sulphur dioxide pollution. Leaf damage and desiccation resulted from continuous exposure to concentrations as low as 0.05 ppm. Other plants, among them eucalyptus trees and several pine varities proved to be sensitive to that pollutant although they usually could withstand much greater concentrations than alfalfa.

A common lychen, xanthoria parientina, was found to be a reliable indie of the presence of SO_2 and other pollutants: abundant in all other areas of the Carmel range, this organism becomes successively less common as one approaches the industrial areas near the foot of that mountain and completely disappears in their immediate vicinity.

The detailed study indicates that a carefully thought out system of plantings, near suspected sources of air pollution, can provide a reliable biological early warning system at a cost any community can afford.

CSO: 5000/4714

PLANS TO COMBAT EROSION, DESERTIFICATION OUTLINED

Tunis DIALOGUE in French No 405, 7 Jun 82 pp 20, 21

[Article by Othman Gharbi: "Holding Back the Desert"]

> [Text] 5 June 1972 - 5 June 1982: 10 years have passed since the Stockholm appeal for worldwide awareness of ecological problems.
>
> Today in Nairobi, by encouraging this awareness to take root even more outside Europe, those favoring it can measure the ground covered--and that left to cover.

For Third World countries, the question of environmental protection is especially acute and vital, as it is a matter of safeguarding at any cost the very sources of minimum subsistence, which in many cases are either undeveloped or threatened.

In North Africa there has been a program of action for several years for the overall protection of the Mediterranean; several coastal states participate in it. Priority actions have been identified, in particular the protection of the soil against erosion and desertification.

Whereas in the past, sand-filled hourglasses measured the passage of time, today sand often devours life.

This means that the countries facing the encroaching desert, the deterioration of arable land due to the disorderly use of mechanized agriculture, sprawling neo-Roman urbanization--which avidly consumes agricultural land--and, sometimes, catastrophic floods, are not merely struggling against "nuisances," although efforts are also being made there to humanize the environment (see DIALOGUE No 393, 15 March 1982).

Green Belt

The scope of the task makes closer and more efficient international cooperation necessary, in conducting studies as well as carrying out pilot projects in each country concerned. Among other things, the "Green Belt" program for North Africa is to be reactivated; it should receive at least as much attention as the present "Blue Plan" for the Mediterranean Sea itself.

In Tunisia, according to expert technicians, 64 percent of the country's surface, or 10 million hectares, are affected to a greater or lesser degree by the phenomenon of desertification. This leaves only about 5 million hectares of usable agricultural surface, which is vulnerable to erosion.

It is said--although the figure has not been scientifically verified—that every year about 10,000 hectares are taken over and rendered sterile by the desert or erosion!

It is true that a large proportion of this land is arid, semidesertic or steppe-like in the center and south of the country. But is it known that even the north (governorate of Biserte), agricultural land is affected by sandstorms from the seacoast?

Before the country's independence, the colonial authorities took no interest in this danger, which did not yet affect the useful part of Tunisia.

Since 1956, the government of independent Tunisia has undertaken an anti-desertification program on a large scale.

Many operations have been successfully carried out, in particular stopping the sands which feed the dunes and stabilizing these dunes by planting vegetation.

Jessours

This vegetation--in particular acacia and atriplex trees--also provides valuable forage for the domesticated animals in these regions (camels, goats, sheep, etc.).

Thus more than 50 cases have been protected, bringing the number of protected hectares from only 2,000 in 1962 to 14,000 in 1972 and 41,000 by the end of 1978.

At the end of the same year, over 150,000 hectares of land were reclaimed thanks to the building of "jessours" (small dams made of dry stone) due to the ingenuity of the people in the south.

By instituting a tree holiday very early on, Tunisia gave special impetus to reforestation at all levels: Aleppo pines in the north, eucalyptus and poplars as windbreakers around farms, and drought-resistant plants in the central and southern parts of the country.

Of the 20,000 reforested hectares, 1,750 were reforested to protect oases.

However, with a forestation rate of 3 percent, the forest cover remains insufficient. Forests both protect and produce; their double economic and social role has been proven by now.

During the Fifth Plan (1977-1981), the following operations were carried out:

--Reforestation of 16,500 hectares;
--Treatment of 120,000 hectares against erosion;
--Opening of 1,300 km of access roads.

But the very high costs of these operations hold back their development. Nevertheless they remain priority projects, because it is impossible to put a price on the conservation of the nation's heritage of land and water.

100 Million

Thus the ministry of agriculture's capital budget for 1982 set aside 30 percent of the total for forests and the fight against erosion; this will create millions of working days.

For the Sixth Plan (1982-86), total investments set aside for water and soil conservation and reforestation should be more than 100 million dinars, compared to 44 million during the Fifth plan (1977-81). Of these investments, 40 percent will be for water and soil conservation and 27 percent for reforestation.

These investments will affect, in particular, the northwest, the central west and the south. The tempo of anti-erosion management and the rhythm of the reforestation process will be noticeably improved.

In 1972, 10 years ago, the first national seminar on desertification, held in Gabes, made it possible to indentify a strategy designed, in particular, to make the population participate actively in the fight against desertification at all levels: local, regional and national.

With the appearance of new water resources in the south, this type of plan becomes necessary.

An ambitious plan necessarily implies bold methods--at all levels--which are off the beaten path.

Complemented by interregional cooperation, centered for the first stage in the Institute for Arid Zones, this type of approach could lead to a large-scale operation capable of really holding back the encroaching desert.

9855
CSO: 5000/5021

BRIEFS

BANANA CROP DESTROYED--Torrential rains from 28 June to 5 July, flooded about 80 percent of the Dabou plantations (representing 35 percent of the nation's production) and destroyed an estimated 25,000 tons bananas valued at 4 billion CFA francs. Banana growers also suffered enormous losses in 1973 and 1976. [Abidjan FRATERNITE MATIN in French 16 Jul 82 p 1]

CSO: 5000/5794

BRIEFS

OIL TRANSFER--Port Elizabeth--A start to a 68-hour transfer operation of more than 120 000 tons of oil from the damaged vessel Marofa in Algoa Bay to another vessel was made yesterday afternoon. The chief pollution officer of the Department of Transport's marine section, Mr Bill Bricknall, said the transfer to the Norwegian vessel, the Johs Stove, was expected to be completed without problems as long as the weather remained good.--Sapa [Text] [Johannesburg THE CITIZEN in English 4 Aug 82 p 4]

CSO: 5000/5789

BRIEFS

CATTLE DYING--Plumtree--About 50 head of cattle have been dying each day in the drought-stricken Plumtree area and the number is rising, the senior animal inspector for the district, Mr M.H. Mahanso said yesterday. The highest daily death rate was recorded between July 4 and July 7 when between 55 and 68 animals died each day. [Text] [Johannesburg THE CITIZEN in English 4 Aug 82 p 8]

TAKAWIRA'S DROUGHT CRISIS EASED--MVUMA--FOOD RELIEF is being given to people of the Takawira district, the district administrator here, Mr Absalom Sibanda, said yesterday. "Due to the severe drought in the southern part of the Takawira district we have had to bring in food relief, starting at the beginning of this month, and we expect it to go on for a year," Mr Sibanda said. The exercise was being carried out by the Ministry of Labour and Social Services with the help of the Ministry of Agriculture, he said. "We have been distributing only maize grain, but plan to distribute groundnuts, beans and kapenta fish," he said. "So far 1 274 bags of maize have been distributed and we are hoping to receive 40 bags of groundnuts and nine bags of beans." A husband and wife were given 30 kg of maize grain a month while a child got 7,5 kg, he said. There are five distribution points in the district at Chinyunu, St Joseph's Chaka, Moyo Musande and Hwata. "Workers of the District Development Fund and the Central Mechanical Equipment Department are helping in the distribution of the food," Mr Sibanda said. [Text] [Harare THE HERALD in English 28 Jul 82 p 7]

DROUGHT RELIEF NEEDED--GWERU, DROUGHT-HIT communal land farmers in the Midlands province, who have not heeded the advice of the experts to get rid of their cattle, have not yet been hit by many deaths. "But I believe this is just the lull before the storm, a period of grace they have been given before the arable areas, where they have been feeding their cattle, have run out of food," says the provincial extension officer of Agritex, Mr Bob Vaughan-Evans. He added that water was perhaps an even bigger worry than food as far as both cattle and humans were concerned ... "and I can see all sorts of relief measures having to be taken before the end of the year". He said the farmer had not supported the cattle sales and even if they supported them from now on their condition would be poor. It would be a case of whether the Cold Storage Commission could get them alive to some point where they could feed them. "At this stage we can say there have been a few deaths from starvation and I think these losses will step up in the middle of August," he said. The worst-hit areas are Mberengwa and Zvishavane, then Chiwundura and Chilimanzi, then Shurugwi, Lower Gweru, Zhombe and Silobela. [Text] [Harare THE HERALD in English 28 Jul 82 p 6]

CSO: 5000/5790

HAZARDOUS WASTE LAWS VIEWED IN WAKE OF DUMPING SCANDAL

Processing Firm Official Comments

Helsinki HUFVUDSTADSBLADET in Swedish 14 Jul 82 p 2

[Article by Ann-Britt Gronroos]

[Text] "There hardly is any industry in Finland that has no problem waste," Folke Aarnio said. The chemical, metal, pharmaceutical, paint, graphics, and food industries, among others, have the greatest problems.

"Even a modern carpenter's workshop has problem waste," he said. "The various glues and paints are difficult to break down. The only industry that has virtually no waste that is harmful to the environment is the textile industry."

Problem waste generally brings to mind waste generated by industry, but the individual consumer is not totally without blame.

"All old medicines, aerosol bottles with insecticides or herbicides, impregnated wood, pressurized containers, leftover detergents, paints, lacquer and varnish, junk from the car, flashlight batteries, and thermometers--all these are included in the term "problem waste."

Folke Aarnio fears that these types of waste will cause serious problems in the future.

"We must not concentrate only on labels with the skull and crossbones. A study in Denmark has shown that such poisonous waste constitutes only 0.3 percent of all problem waste."

"Moonlight Disposal"

But what shall we do with all the waste?

"That is precisely what we do not know," section head Olli Ojala said. "Waste management has its shortcomings, as we know, but we probably have been too naive."

At the Interior Ministry, Ojala could not point to any figures, but he indicated that some estimates had been made with regard to oil. According to them, there are about 50,000 tons of used combustible oil each year. At least half of the waste oil is burned, but about one third goes into the sewer system, to waste dumps, or to other unlawful dumping sites.

Of the remaining problem waste, Folke Aarnio said that just over half is disposed of by so-called "moonlight disposal."

"Problem waste management has been a serious problem. People do not know what to do with it and the cost can be considerable," Aarnio said.

"I am aware of the large quantities that are unaccounted for and I live with the constant fear that a catastrophe could occur," he continued. "The groundwater is most sensitive and such a catastrophe would not be cheap."

He pointed to the accident that occurred near Landskrona in Sweden. Herbicides and insecticides reached the groundwater through a leak and then flowed into streams. The cleanup took several years and cost 30 million Swedish kronor.

"Total management of problem waste has become expensive for companies, of course," Aarnio said. "This is why 'moonlight disposal' occurs. Fortunately, major environmental catastrophes were avoided until the accident in Dragsfjard."

Stockpiles Waiting

In addition to all the waste dumped in forests and in the ground, about 20 to 25 tons of problem waste that is most difficult to destroy already exists in storage facilities. This is waste that already is awaiting a special facility. "The solid waste can be stored for an indefinite period of time," Aarnio said. Usually the waste is stored in 200-liter containers either buried in the ground or in indoor warehouses. They often are stacked up and covered.

"Of course, supervision is the most important aspect of stored hazardous waste. The containers should be checked carefully at regular intervals so that no rust or leakage occurs," he said.

Of all the problem wastes, industry itself takes care of 30 to 35 thousand tons. Many industries have their own combustion furnaces where they can manage waste without endangering the environment. Some industries are in contact with municipal waste management authorities that take care of the problem waste.

"Actually, the municipalities are responsible for seeing that the waste is properly managed within the area, but the main responsibility is on the one who produces the waste," Ojala said.

Little Legal Export

Olli Ojala believes that no more than one tenth of the problem waste is exported, but problem waste can be exported illegally, of course, as "junk." It is almost impossible to control such activity.

Industries with waste that is difficult to destroy and hazardous to the environment, however, rely on exporting the waste when there is no other alternative.

Neste Oy, for example, has transported its problem waste to the North Sea where chlorine-containing waste is burned.

PCB has been exported to England for burning.

The most modern facility in Europe is located in Denmark where the electronics industry has sent waste for recycling, including circuits contianing much copper.

Previously, mercury from batteries was exported to German salt mines. In addition, West Germany has combustion facilities capable of handling problem waste, even in soluble form.

No Supervision!

No law on problem waste was in effect until April 1981. According to it, anyone who creates hazardous or otherwise troublesome waste also is responsible for managing it. According to the law, industries and homes with problem waste must submit a plan for waste management to the municipal government,

"We do not know if this has occurred," said Olli Ojala at the Interior Ministry, "But we hope to begin an investigation in the near future on the entire problem waste situation in our country."

Ojala believes that the law provides a good foundation for waste management, but for it to be 100-percent effective, provisions should be made for supervision.

At present, the environmental protection section has one employee to deal with waste problems. There also is only one employee in Tavastehus Province. He is involved in the future facility in Riihimaki. These are, for all practical purposes, the only people in our country who are dealing with problem waste--and they are hardly sufficient, according to Ojala.

Finally a Plant

In the late 1960's the first national committee was appointed to discuss the problems of waste management, but the first concrete proposal for a state-owned waste facility was not made until the mid-1970's.

Now, however, the state has formed a corporation along with various municipalities and companies.

The Finlands Problemavfall AB plant in Riihimaki should be complete in late 1984 or early 1985. The plant is designed to receive about 71,000 tons of problem waste annually. This is a large portion of the total hazardous waste produced in Finland.

"There long has been an urgent need for Finland to construct a waste management plant," Ojala said. "When it is complete, the plant in Riihimaki will be almost the only legal site to receive problem waste from industry."

Folke Aarnio stressed that the Riihimaki plant was the greatest investment ever made by Finland to protect the environment.

"Industry has waited for it. It really is needed. This was demonstrated by the accident in Dragsfjard," Aarnio said. "The accident also opened people's eyes at last and showed how great the problem of hazardous waste actually is."

Industry Leaders' Processing Procedures

Helsinki HUFVUDSTADSBLADET in Swedish 14 Jul 82 p 2

[Text] HUFVUDSTADSBLADET talked to representatives from several industries that have problem waste. It turned out, however, that the individual companies do not have such large quantities of problem waste. Everyone agreed on one thing, however: less hazardous waste is burned, while more dangerous problem waste is stored until the waste treatment plant in Riihimaki is completed.

There is "extremely little" problem waste at the A. Ahlstrom Osakeyhtios plants in Karhula. The company has constructed its own storage site on company property for the bottles of poison, waste oil, and analine paints used at the plants. This storage site has been used for many years and now the company simply is waiting for the problem waste facility to be completed in Riihimaki.

"The only problem we have had is with arsenic," public relations director Erkki Noronkoski said. "But 2 years ago we decided not to use arsenic at all, since it was so difficult to manage."

Some of the waste is burned at the plant, but this burning always occurs with the cooperation of the authorities.

Oy Alko Ab has its own purification plant in Rajamaki, but according to product planning director Olli Kauppila, the company has no problem waste.

"The waste water we have here in Riihimaki comprises only about one fourth of the water we use in production. The water first is purified anaerobically, then with plastic cells and with acitivated sludge treatment. The sludge that is formed is removed and dried to be used as fertilizer."

"The purified water has a pH value of 30 [as published]. This is in accordance with municipal requirements," Kauppila said, "and for this reason we are able to pump it out into the river. We even are able to pump some of the cooling water back up onto the sand ridge to be reused."

Kemira Oy has problem waste in the form of leftover pesticides and pesticide containers. The company has its own combustion facility in Vasa to deal with the waste. Arsenic also has been stored there for about 10 years. The arsenic is stored in 50-liter containers which, in turn, are placed into 200-liter concrete tanks. There are about 10 tanks of arsenic, in addition to some metallic salts and lead sulfate. These toxic substances are kept in closed storage areas. So for, no supervision has been needed.

Farmos-Yhtyma Oy has a contract with the city of Turku. In accordance with the contract, Turku receives all pharmaceutical waste and deals with it in its combustion plant. This waste management always occurs under special supervision. About 10 tons of medicine is involved, but this also includes the packaging.

For about 6 months, Oy Partek Ab has attempted to dispose of 10 to 12 tons of unusual compounds used in the plastics industry for experimental purposes. The company still does not know what will be done with these substances. Sweden has promised to take small quantities and samples now are being analyzed to find out exactly what substances are involved.

Director Gunnar Hognas said that the basic principle has been to store the problem waste. About 10 tons of hazardous waste now is in storage.

Mineral wool waste also is being stored. In the production of mineral wool, the cooling water is polluted by various phenol derivatives. This is a dangerous substance that is monitored carefully at the plant. The water is collected in large basins. At the Hyryla plant the waste is burned.

At Oy Shell Ab problem waste results primarily from the cleaning of gasoline tanks, although the amounts are "negligible." The company is able to store these amounts itself.

Oy W. Rosenlew Ab presently has a problem waste stockpile of about 1,000 containers as large as barrels. The company is waiting for the Riihimaki plant to be completed. The waste is in the process of being analyzed chemically, catagorized, and stored according to types. The Riihimaki plant will require a detailed list of contents in the waste. It is up to each company to analyze samples of waste sent to Riihimaki.

Problem waste occurs at Orion-yhtyma Oy only when a batch of medicine is damaged or improperly manufactured. The waste is being stored until the Riihimaki plant is complete.

Study Needed to Survey Extent of Problem

Helsinki HUFVUDSTADSBLADET in Swedish 18 Jul 82 p 2

[Editorial by Jan-Magnus Jansson : "How Will The New Waste Law Function"]

> [Text] The recent toxic waste scandal has drawn attention to the law on hazardous waste. Jan-Magnus Jansson states that the law provides a good foundation for up-to-date

management of the problem, but implementation of the law is taking time.

The toxic waste scandal in the waters of Dragsfjard once again has drawn attention to the shortcomings of our waste management system. In 1979 the new waste management law went into effect and was greeted as an important milestone in environmental protection in our country. The weakest point in the waste management law was that the regulations on problem waste were far from sufficient. This shortcoming was corrected when parliament approved amendments to the law which took effect on 1 April 1981.

It may be said that our legislation provides the fundamental tools needed to overcome the waste problem in an acceptable manner. It is remarkable, however, that ordinary people see few signs of the effects of the new legislation, even though most of the regulations have been in effect for over 3 years and the additional regulations approved by parliament have been in effect over 1 year.

The only positive aspect of the scandal involving containers of toxic substances found in Dragsfjard is that the authorities and the general public have turned their attention to the waste problem in general and the problem waste situation in particular. Actually, this incident cannot be referred to as an example of poor legislation. There always have been unscrupulous businessmen who seek personal gain from the difficulties of others. The waste management law provides punishment for such people that may be considered sufficient. "Felony waste management crimes," as has been pointed out repeatedly in recent days, can result in prison sentences from 1 to 6 years.

The lesson to be learned in the most recent case, if our understanding of the situation proves to be correct, is that industry is so hard-pressed by the need to store quantities of problem waste that even highly respectable firms jump at an apocryphal offer. Solutions to the practical problems will be facilitated greatly when the problem waste plant in Riihimaki is completed which, according to the plant administration, will be in late 1984 or early 1985. The capacity of the plant should be great enough to deal with the waste that now must be managed. Here we must recall the many obstacles that arose when the facility was being planned and we should extend our thanks to the town of Riihimaki which had the courage to host the facility and put an end to the hunt for an acceptable site.

Another conclusion that perhaps may be drawn is that the decision-making process within companies on the waste issue should be reviewed. The detailed regulations in the law and the severe punishment that may result indicate that society considers this an important issue. This also should be reflected within the company so that the decision on the placement and management of waste should be made as carefully as possible and in an expert manner.

Recent publicity also has made it apparent that public officials know too little about where and in what quantities problem waste arises in the production process. It has been pointed out that only a portion of the critical substances can be classified as poisons and, thus, are included in the toxic substances law. Thus, a survey of the problem waste situation in its entirety is needed.

Problem waste, however, is only one sector in which results are expected from the new legislation. Another extremely important area is waste recycling. Recycling is the fundamental principle of the law. In this case, the basic principle not only is of economic significance, but it is considered by many people to be a moral obligation. The dumping or destruction of material that could be utilized in production to save the extraction of new raw materials seems both inappropriate and objectionable.

A working group appointed by the Interior Ministry recently took the trouble to calculate the extent and value of the usable waste that is used and that is wasted each year. It was found that 27 million tons of waste annually is utilized in one way or another, while 30 million tons that could be utilized is wasted. The value of this latter quantity was estimated at 2.6 billion marks. It should be noted that waste from the forestry and mining industries was included in this figure, in addition to waste in the conventional sense.

It could be said that there is general agreement that recycling is needed, from the individual household member who feels guilty as he takes a rusted household appliance to the dump or throws away no-return bottles, to the company that could utilize the special type of domestic raw material found in its waste. Nevertheless, the regulations in the law run into several bottlenecks on the way to implementation.

Waste that shall be utilized must be sorted (either at home or at a central municipal facility) and it must be suitable for further processing. There also must be a potential purchaser who is interested in receiving the raw material for economic reasons.

The present system falls short on all these points, although the situation varies depending on the type of waste. A household cannot begin sorting waste on its own initiative (except for paper which traditionally has been utilized) unless the various types of waste are removed separately by waste collectors. Sorting could occur at the municipal level, but so far the municipalities have shown little interest in recycling. In general, the municipalities have been inactive in implementing the spirit of the law, even though the law expressly gives them the task of recycling waste "to the extent possible."

Industry is the final link in the process. It is responsible for seeing that the reclaimed material actually is utilized. Here established habits and traditional channels play an important role, although in recent years industry has become interested in waste as a source of energy and as a raw material.

The government cannot be accused of having been blind to the fact that the waste situation has not had a great impact on society. Several committees and working groups have developed proposals for making waste management more efficient and making the use of raw materials from waste more economically attractive. In any case, the municipalities hold a key position. It is possible that the law should be more severe with regard to them, but even having several "model cities" implement the system prescribed by the law certainly would have a stimulating and normative effect.

9336
CSO: 5000/2147 END

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10 September 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 367

CHINA ADDRESSES ENVIRONMENTAL ISSUES -- II

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'NATIONAL LAND ECONOMICS' DEFINED, PRIMARY TASKS OUTLINED

Beijing ZIRAN BIANZHENGFA TONGXUN [JOURNAL OF DIALECTICS OF NATURE] in Chinese Vol 3, No 5, Oct 81 pp 4-10

[Article by Yu Guangyuan [0060 0342 6678]: "National Land Economics"; based on speeches delivered at First Technical Conference on National Land Economics, 5 May and 6 June 1981]

[Text] 1. What Is National Land Economics?

The term "national land economics" is one which we have chosen ourselves. Before defining it, it is useful to consider whether it is a natural or a social science and whether it is economics or geography.

It seems to me that many of the sciences which we call "natural sciences" really are mixtures of natural and social science. Industrial science, agricultural science, medical science and many others are examples: their objects of study are not "natural nature," but "nature in society." Pure natural sciences do exist, for example physics, biology, astronomy and geology; for celestial bodies, earthquakes, typhoons and the like are not subject to man's intentional influence; they are aspects of nature. But industry, agriculture and medicine which have already been subject to the effects of man's will; they are nature in society.

Even an extremely primitive stone axe could not possibly be produced by nature. This is why I say that the sciences mentioned above are combinations of natural and social science. People engaged in natural science have long had the one-sided view that they have nothing to do with social science, while in reality they are constantly interacting with it. Although there are many branches of science, with large numbers of persons engaged in them, which study natural phenomena, they are much fewer in number than the sciences dealing with the natural phenomena of society, which we may call "impure natural sciences." In addition, sciences such as industrial economics and agricultural economics, which were originally considered social sciences, are in the same situation. They are not pure social sciences, but combinations of natural and social science. Although there are pure social sciences and pure natural sciences, they are fewer than we initially thought. The "national land economics" which we are discussing is one of these mixed sciences. It is a natural science and a social science; it is a mixed science, but it deals primarily with social and economic matters, while still being tied to the study of nature.

What social and natural sciences come together in national land economics? There are a great many. Geology, meteorology, hydrology, oceanography, botany, and zoology are pure natural sciences involved in it; political economy and the theories of the state and law are pure social sciences involved in it. In addition, many essentially mixed sciences are also included; geography and economics are the most important of these.

Let us now consider whether national land economics is primarily economics or geography.

I believe that national land economics focuses primarily on economics, while economic geography focuses primarily on geography. Economic geography is the basis of land economics. Economic geography and national land economics both study land from a geographical standpoint, but the former focuses on description and analysis and the latter on development, exploitation, protection and management. Just as tabulation plays an important part in statistics, map-making occupies a predominant place in economic geography and national land economics; but the map-making that is done in economic geography is primarily descriptive and analytical, while in land economics it primarily involves programs and plans.

While national land economics is a field with its own theory and methods, it also has its own particular objects of study. Just as the earth is a planet subject to the laws of planetary motion, but the earth which geography studies is a particular planet, what we are studying is not the "general" or even the "special," but the "particular." The object of study of our country's national land economics is this particular piece of land, located on the earth, on the Asian continent, on the western shore of the Pacific, to the east of the Himalaya mountains, with its 9.6 million square kilometers of land area, and the islands and continental shelf outside its approximately 18,000 km of coastline, as well as its subterranean regions and the space above it; of the entire globe and the entire universe we study only this piece of land, this particular thing. Why do we pursue this particular investigation? Because it is of great importance, because it deals with nothing else than our land, our natural place of abode for ages. Here I would like to quote Feuerbach. In discussing man's dependence on nature, he said, "My life and my nature could be produced only by the natural surroundings of this country, and it must be borne in mind that I am not a man in general, but a specific, particular man. For example, I am a man who speaks and thinks in German; there is no such thing as language in general, only this or that specific language. My existence, the nature of my life, are inescapably dependent on particular natural conditions." ("Philosophical Writings of Feuerbach," last volume, Sanlian Press, 1962). Since in carrying on socialist modernization we aim at the prosperity of the people of this country, we must study our own country, its natural conditions, and our land.

At this point I should like to mention some differences between the method of studying a particular object and the methods of studying objects in general. The methods of investigating objects in general are abstract. Of course, when we use the term "abstract," we do not mean abstraction devoid of content. The abstract content of science, as it is used in Marxism, is an abstraction rich in content. Although political economy investigates abstract theory, its method is to go from the concrete to the abstract to the concrete; the abstract must always return to the concrete. But when we study things in general, our results are developmental laws, and the "concrete" to which we refer in this context is also something abstract; it is not an empty abstraction, but a specific abstraction. For example, "output value" is a more specific category than "value" but it is also a general, abstract category. The method of investigating a specific object is different. The way in which we gain knowledge about particular things is like the way in which we study an individual, for example Zhang San. We may say, "Zhang San is an individual," but this does not constitute any understanding of Zhang San as an individual, because we have only recognized the common nature of Zhang San and other humans. Nor will it do to say, "This is Zhang San." In this case we have simply given this person's name, we have not differentiated this individual. I believe that it is impossible to come up with a statement about this individual. In his "Philosophical Notes," Lenin quotes a statement of Hegel's: "Language really expresses only universal things, but people think particular, individual things, and as a result we cannot use language to express the things which people think." I believe that knowledge or understanding of a particular thing is multisided knowledge or understanding of that thing; in other words, the method of studying the individual begins by grasping general laws, then using the knowledge of these laws to discover the individual and all of its aspects, then using this growing knowledge of the various aspects to enrich the knowledge of the individual. The key to the study of the individual is the concrete. The "concrete" to which we refer in studying the individual is of this kind. National land economics uses this method of study. It is different from the method used to study things in general. Not only is our country's national land economics as a whole just such a science of the particular thing, but in addition some branches of our country's national land economics are also sciences which study particular things, e.g. "Yangtze-ology," "Yellow-River-ology," Hainan-Island-ology," "Xishuangbanna-ology [Dai Autonomous Prefecture, Yunnan]," "China-Desert-ology" and the like. These many parts of national land economics are the basis of national land economics as a whole.

I believe that although our study of our particular national territory cannot fully satisfy us, our knowledge of our own land must inevitably be better than foreigners' knowledge of it. Consider, for example, the Yangtze River, a part of China: many specialists have studied it over the course of history, and some rather large specialized organizations and some experts have studied it since the state was founded. We should be first in "Yangtze-ology." I believe that we must not have an unjustifiably low opinion of our abilities. Naturally, if we do poorly, we may lag behind foreign countries in certain aspects of the study of China, and this would be extremely embarrassing. But it will not do for us to be concerned solely with the basically simple problem of "being first in the world" in the study of our country as an individual entity. We must evaluate our research not in terms of "international standards" but in terms of whether it can be effective in our country's socialist construction.

Next let us discuss the question of whether national land economics is basic economics or applied economics.

The idea that economics is divided into "basic economics" and "applied economic technology" is a conclusion at which I have recently arrived. In the process of developing this idea, I was aided by the article "From Social Science to Social Technology" published in WEN HUI BAO last year by Qian Xuesen. But my line of thought was not entirely identical with Qian's. Initially I thought that the division of natural science into "basic science," "technical science" and "applied science" could be taken over into social science, which could be divided into "basic social science," "social technology" and "applied social technology." Later I moved from this tripartite division to a bipartite division, namely "basic social science" and "applied social technology." I will not go into the matter in detail here, but will deal only with the science of economics. I combined the equivalents of technical science and applied technology into a single entity which I called "applied economic technology," so that I ended up with the two concepts of "basic economics," and "applied economic technology." The two branches can be distinguished on the following principle: basic economic science studies objective economic processes which cannot be affected by man's will, and the laws governing them, while applied economic technology studies processes affected by man's will. Objective law is quite beyond man's power. We should have no emotions about objective law, neither pleasure nor sorrow. Moral concepts are entirely out of place in this context. Our approach to objective processes and objective laws should be to try to understand them. We should coolly and clear-headedly understand that man cannot have the slightest effect on objective laws. I believe that some people have not yet gotten this idea through their heads; we still hear such phrases as "limiting the negative effect of the law of value," or "bringing the positive effects of the law of value into play"; in physics we cannot talk about "limiting the negative effects of the law of universal gravitation" or "bringing the positive effects of the law of universal gravitation into play." The realization that man can have no effect on objective laws is very important for our work, because it can save us pointless effort and the bad consequences that would come of it. The fact that man can have no influence on objective laws does not mean that he has no influence over the development of things. Quite the contrary: man not only can influence the course of things, but can influence it greatly. The reason that man's will can have such an effect is primarily that man himself is a natural entity and an entity in the natural world. He is a specific material mechanism. He has his own capabilities. Material objects must be changed by material forces, and the human body is such a material force. But man is not limited to reliance on his own material force. When Lenin read Hegel's lectures on the history of philosophy, he copied out the following extract: "Man has to interact with the external world via work in order to satisfy his needs; he makes use of the natural world to satisfy his needs, overcomes the natural world, and in addition acts as an intermediary in it. The problem is that the objects in the natural world have different degrees of strength and can resist in different ways. In order to overcome them, man unleashes other objects of the natural world among them and in this way makes the natural world oppose itself; he has invented tools in order to do so. This discovery is spiritual, and these tools must be considered to be higher than objects in the natural world." This idea of Hegel's is almost identical with the sentence which Marx quotes from Hegel's "Minor Logic" in a footnote to Chapter 5 of Vol 1 of "Capital" and in an economic manuscript of 1857-1858. It is this: "The stronger reason is, the cleverer it is. The cleverness of reason consists in its indirect activity which causes objects to influence and affect each other through their own natures and does not itself take part in the process, but only brings about its objectives. These two extracts mean that man uses certain physical capabilities to act as an intermediary, causing other natural objects to act as means of production in the natural world (including implements of production), so that natural objects affect each other while man stands aside and oversees in order to carry out his own objectives. This is man's cleverness. The reason that man is man is that he makes tools, that he has the craft, mentioned by Hegel, of opposing the natural world to itself; modern man has turned this cleverness into science and technology. Our industrial and agricultural technology and our use of the national territory to develop technologies by which production can satisfy the people's needs all are the techniques of this cleverness. At the same time, man is not an isolated individual in his struggle with nature, but is socially organized. When man organizes, his strength becomes greater, and he can also study the basic science of relations between persons and develop applied techniques for relations between persons.

To summarize, both basic economics and applied economic technology have specific functions. Basic economics can prevent people from doing what is objectively impossible and what will make their work go wrong, while applied economic technology, which is based on the results of basic economic research, can assist and organize our strength so that we can use our tools effectively, adopt correct strategies and tactics, and win greater victories in the struggle with nature. Applied economic technology is itself an achievement of economic research, but in addition it is necessary to carry on a large amount of effective scientific research in order to use this technology.

Accordingly, national land economics is a branch of applied economic technology.

Now let us consider the objects of study and the tasks of national land economics.

The object of study of national land economics is the national territory. The national territory is the area over which a state exercises sovereignty; in the broad sense it includes the land, rivers and stream lakes and offshore waters, and their subterranean regions and the space above them, in addition to the continental shelf. Accordingly, the national territory is a certain part of the globe which is under a nation's sovereignty. In negative terms, this sovereignty means that all encroachment on the territory by other nations is ruled out. In positive terms, it means that the nation may utilize the territory. Of course the use of the territory in the positive sense is not only economic, but has other aspects as well. One example is military use as when the Japanese imperialists invaded our country, occupied the three northeastern provinces, North China, East China and a large part of Central China and kept many cities under prolonged enemy rule, but because our extensive national territory gave us room to maneuver, we were able to resist for 8 years, finally gaining the victory. This was not a case of making economic use of the country, but making military use of it. We can define the national territory in economic terms within the context of national land economics because national land economics is not the study of the national territory in general, but rather its study in economic terms, and the scope of the study includes the economic effects of the national territory.

It seems impossible to overestimate the importance of the national territory for the material life of its inhabitants. It is the basic condition for people's existence, for a person must exist in a certain place, and the national territory is the place which a person must have in order to exist. A man in modern society must at least have a certain amount of living area, and this living area must be built on the land. Materials and energy must be taken from the land and processed in order to produce the various material products which man needs. These materials and this energy are all products of the national territory. Naturally some of the products which are used to meet our people's needs are produced in other countries and obtained through foreign trade. But other countries do not give them to us free: we must exchange products produced in this country for them. This general principle, combined with the fact that our country has great potential and that the people's living requirements are gradually increasing, is a source of the particular importance of national land economics in China.

To summarize, we may give the following definition of national land economics: National land economics is a branch of economics which deals with the national territory of a given country. This science has been established in all countries. It includes the study of the general principles, theories and methods of national land economics, but in essence it is the science which studies specific and individual problems of a country's territory. For us, it is the branch of economics which studies the development, utilization, protection and management of our country's territory.

As regards the content of national land economics research, in my speech at the National Land Economics Society conference last July I proposed the following five points:

a. This research should not only be suited to all countries of the world, but also should be in keeping with Chinese theories and methods and should include a precise statement of the objects and tasks of research in this field, its theoretical foundations, the relationship between this type of research and the associated fields of study, the methods of this kind of study, its history and literature, and comparison of this type of work in the various countries of the world.

b. It should include description and analysis of our national territory, including its natural condition and current status as formed by long history and the last 30-odd years' development.

c. It should include economically-oriented research on the theoretical principles of dealing with our national territory, and research on the scientific bases of these principles.

d. It should involve developing and proposing measures and plans for protecting, managing, utilizing and developing the nation's resources.

e. It should include economic investigation of the government's responsibilities in managing the national territory, research regarding the laws which the state should draft and their content, and research regarding the types of organizations needed to manage the national territory and implement the laws.

Strictly speaking, the five points given above are not all tasks of national economics in the narrow sense. For example, national land surveys are a task involving geographical work and surveying and mapping; but since they are so important for national land economics and since the final result of national land surveys will be comprehensively applied in the utilization, development, protection and management of the national territory, such work, which properly belongs to economic geography and surveying and cartography, is included in the agenda for national land economics research. I believe that this approach is correct in utilitarian terms.

2. First-Priority Topics in National Land Economics

Below I should like to say a bit about some of the problems encountered by national land economics.

First, the problem of land classification. As soon as research in national land economics is begun, the problem of land classification will be encountered. The standards for land classification must be effectively investigated. In many articles and documents I have read, land classification is not based on a standard; this would appear to be unscientific. Land classification carried out in terms of national land economics should in my opinion involve two types of standards. The first is natural geographic standards, i.e. classification in terms of climate, elevation, topography, soil characteristics and the like. Our country's climate runs the gamut from tropical and semitropical to temperate to nearly Arctic; in terms of elevation, it has snow-covered mountains, glaciers, high tundra, ordinary plateaus, mountain regions, hill areas and plains. There are also areas of narrow valleys such as Shaanxi and Guanzhong. In terms of soil type, there are the sand dunes of the Gobi and areas with soil cover, including loess, red soil, black earth and secondary saline-alkali soils. In terms of soil moisture content there are arid regions and moist regions; there are marshy regions and lakes, rivers and seas, river floodlands and ocean beaches and the like. All of these categories are based on natural geographical standards, and finer classifications can be made within them.

The other type of classification is in terms of land use, including actual and possible use. In terms of actual use, there is cultivated land, forest land, pastureland, roads, airfields, land occupied by houses, waterways, reservoirs, fish ponds and the like, as well as unutilized wasteland. In terms of potential use or suitable use, there is arable land, land suitable for forest, land suitable for grazing and the like. Determinations of suitability can be made in quantitative terms: for example, areas suitable for fish-raising can be classified as those with rich nutritional capabilities, those with poor nutritional capabilities and the like.

Although these two classification methods are related and classification of the various land types in terms of natural geographic principles is naturally very closely associated with their actual or possible use, the two methods do not stem from the same classification standards and they must not be confused.

Only by achieving clarity on the subject of land classification standards will be in a position to proceed with statistics and analysis. I believe this work must be accomplished first.

After land is classified, there is also the problem of evaluation, i.e., of how to evaluate each kind of land in terms of the economic position which it occupies.

Second, there is the problem of the national territory in terms of its ecology.

The development and utilization of the national territory is intimately tied to environmental protection. In the long history of development of the natural world, there have been mutually constraining relationships between the various types of matter and movement. These relationships developed naturally not in accordance with our purposes. Some of them are unfavorable to us, but others are favorable to our life and activity as humans.

I wish to bring up one particular question here: whether ecology can be divided into natural ecology and man-made ecology. The need to protect and scientifically remake beneficial natural ecologies involves many problems which urgently require effective research and good decision-making for their resolution.

It is also necessary, during our activities, gradually to improve unfavorable manmade ecologies. Actually, during his long history, man has caused many major beneficial changes to occur in the ecology of the natural world. For example, over several tens of thousands of years, man learned how to tame wild animals which he had caught, to domesticate them and gradually to change them; and he has cultivated wild plants and continually improved their varieties. We have developed more and more progressive livestock raising and agriculture, have learned to work the soil, to plow it, harrow it and roll it, and have mastered cultivation techniques; we know how to use animal and human manure, plant stalks and various types of materials to fertilize the fields, and we have learned to irrigate. This has enabled us to maintain soil fertility for long periods and to obtain large quantities of products beneficial to humans from plots of land of a given size. This has changed the initial balances of soil, plants, sunlight, water and air moisture and has established new balances; it has created beneficial or more beneficial ecological balances.

But we must protect these beneficial ecological balances and prevent them from being disrupted. However, the ecological balance of the natural world consists of the interrelationships of many complex factors, and there are some aspects of the relationships that are not well understood. Knowledge in this area is gradually being deepened. Although we already know that we should protect certain beneficial ecological balances, as a result of various social causes and as a result of paying attention only to short-term, partial interests, we have been unable to protect them effectively, so that conditions extremely unfavorable to us have been created. The instances are too numerous to mention; and they intensify and become more serious as a result of the measures which man uses to modify nature. Several thousands or several tens of thousands of years ago, we only had a small variety of manual tools and we could make use only of our own physical strength and that of oxen, horses and the like; and while at that time we only had a very small influence on the ecological balance, today we have multi-horsepower earthmoving equipment, bombs of very great TNT equivalence and the like, and if we do not use them properly, we may gravely disrupt the beneficial natural ecological balances. In recent years we actually have seriously harmed the beneficial natural ecologies although this has happened in a short period, the degree of disruption is shocking and some of its consequences are already becoming apparent. Protecting beneficial ecologies has become the main aspect of our treatment of the natural ecology. Today, our development of our national territory must include environmental protection. We should treat questions of this type as matters of major importance. If we ignore them and continue to blindly disrupt the ecology, the consequences may be even graver. We must firmly resolve to put a stop to the continuing degradation of the environment. We must make people aware of ecological disruption and its consequences and induce them to give the matter serious attention: this is an important task of national land economics.

Of course, we must also use our 33 years of experience since the founding of the state to study ways of establishing scientific, rational manmade ecologies. For example, many reservoirs have been established on the middle and lower Yangtze, which naturally are cut off from the water flow downstream. In these areas, many original lakes and marshes have been cut off from free communication with the rivers for flood control and other reasons, so that they too are isolated to a certain degree. The last trip I made to Hubei it seemed impossible to restore the earlier free communication between lakes and rivers. Since the initial natural ecology cannot realistically be restored in Hubei, I suggested that it might be possible to set up some manmade ecologies that would be superior to the natural ecology in such reservoirs and lakes. I believe that if we carried on scientific research, summarized existing experience and created new experience, we could create a manmade water-area ecology that would be better than the natural one. Because the manmade ecology would be consciously constructed, we could see to it that it would be better than the natural ecology. When I was in Hubei I said that the lakes and reservoirs had not only water but a very large surface to absorb solar radiation. The presence of sunlight and moisture makes plant growth possible, so that water bodies are also agricultural fields. If we have bodies of water, it is possible to engage in "aquatic agriculture." The "crops" of aquatic agriculture could be floating lower plants or higher aquatic plants such as water weeds and lotus. These plants would largely furnish food for lower forms of animal life and fish swimming in the ponds and reservoirs. Accordingly, I believe that establishing a rational manmade ecology is a very realistic undertaking. Water chestnuts, Gorgon euryale, lotus and water weeds could be raised in the water, rushes could grow on the shore, aquatic animal life could multiply in the water, and these would be excellent fish food. In the mulberry farm fish pools in Shunde, Guangdong, mulberries are planted at the edges of the ponds, the mulberry leaves can be used to raise silkworms, and the silkworm droppings and leftover leaves are thrown into the ponds, making good food for fish, while the fish manure fertilizes the water, allowing the growth of planktonic animals, and the planktonic animals provide nourishment for carp; in addition the fish manure which sinks to the bottom of the ponds can be dug out, and is an excellent fertilizer for the mulberry trees. The result is an excellent manmade ecological cycle.

The third question is that of the relation between the labor force and land use. This is a part of the question of national territory and population. The question of the relationship between population and national territory is a major one of national land economics. I will only say a little on this topic, namely that the problems of land and population can be said to be two aspects of one problem. Whether our population increases or decreases is fundamentally a question of whether the ratio of population to land rises or falls. The ratio of population to land area in our country (i.e. the average amount of land per person) is extremely high. The population density is slightly over 100 persons per square kilometer, and our country is 13th among the countries with areas of

100,000 square kilometers or more. Worldwide, the per capita quantity of arable land is 5.5 mu per person, whereas in our country it is only 1.5 mu per person. Accordingly, we must strive to control excessive population growth. This is a matter of strategic importance. But to solve the population problem we cannot focus solely on birth control, but must also strive to make thorough use of the land. Accordingly I urge that the land problem should be elevated to the same status as the population problem. People are now taking the land problem more and more seriously, but there is still a rather large gap between its actual seriousness and the perception of it.

Our country's high population density is a historical fact and we can only take it as a point of departure in considering the question. Our current stress on birth control does not mean that we can adopt the Malthusian theory of population. We must also affirm that man is not only a consumer but a producer, and that, provided we can effectively solve the problem of relating the labor force to the means of production, the things which a man produces, even under current conditions in China, can be more than the amount currently consumed, so that all of social production could be developed. We now realize that if population is not strictly controlled, our development rate will be affected, and so we cannot agree with the view that a large population is a good thing. But since we already have such a large population, we must make full use of the existing labor force to more effectively develop and utilize our national territory. Our current situation in this respect is that we still have many areas where land is plentiful and population limited, and we must invest more of the labor force in developing these areas. These areas of abundant land and limited population result from an inadequate labor force or from disuse of land. We need not go far to find them: if you travel through the hill districts in the suburbs of Beijing, you will see districts which could be reafforested but currently are barren. Another circumstance is that in which the land has already been developed but there seems to be excess labor. Under these circumstances we should find a way of making further use of the labor force. We have already promoted labor-intensive industries and agriculture, but I believe that we also should promote labor-intensive forestry and fisheries. In agriculture we have achieved outstanding results in yields per unit area, and we should do the same in forestry and fisheries. I have heard that in Yichang, Hubei there is a factory-run fish pond that has an area of something more than 10 mu and produces more than 3,000 jin of fish per mu. If this kind of experience were more widespread, what a great increase in aquatic products we would achieve!

The fourth problem is that of national territory and transport and communications. The various parts of the national territory must be closely linked together into an organic unity to make thorough use of their economic capabilities; thus transport and communications constitute an important question and one whose study should receive a high priority.

8480
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CHINA MAKES PROGRESS IN ENVIRONMENTAL PROTECTION

OW220358 Beijing XINHUA Domestic Service in Chinese 1157 GMT 19 Aug 82

[Excerpts] Beijing, 19 Aug (XINHUA)--China's environmental protection work has made headway during the past 3 years while carrying out economic readjustment. At present, the quality of environment in many localities has been improved, the serious industrial pollution in a number of cities has been reduced and the quality of water of various rivers and lakes has also been improved. Oil and heavy metal pollution in large areas in the Bohai Gulf and Yellow Sea is now basically under control. The environmental protection work in Beijing, Hangzhou, Suzhou, Guilin and some 20 other cities has achieved particularly fine results. [passage omitted]

The State Council has showed concern for the serious industrial pollution in the Bohai Gulf and Yellow Sea region; and massive and comprehensive efforts have been made to reduce pollution. During the past several years, more than 180 pollution control projects have been carried out in the Bohai Gulf and Yellow Sea region. The amount of petroleum and heavy metal left in the sea region has been greatly reduced. At present, the oil content of sea water in the Bohai region has been reduced to a level close to the state standard for fishery development. [passage omitted]

Environmental pollution in China is mainly caused by industrial wastes. Since the Third Plenary Session of the 11th CPC Central Committee, environmental protection and economic departments in various localities have conscientiously implemented the directives and decisions of the Party Central Committee and the State Council on Environmental Protection and have done a lot of work in reducing pollution and improving environment by relying on and cooperating with the broad masses of people. Many industrial and mining enterprises have raised their rate of utilization of energy resources, improved management, carried out technical innovations and made multi-purpose use of the "three wastes." As a result, many problems concerning industrial pollution have been effectively solved. [passage omitted]

A concerned department has pointed out that although we have achieved very good results in environmental protection work, the problem of pollution is still quite serious. All localities and departments must continue to carry out environmental protection work in a proper way and must not treat this problem lightly.

CSO: 5000/4072

SOLVING THE PROBLEM OF ENVIRONMENTAL PROTECTION AND ECONOMIC POLICY

HK261000 Beijing HONGQI in Chinese No 13, 1 Jul 82 pp 27-30

[Article by Zhou Fuxiang [0719 1381 4382]]

[Text]

I

The problem of the environment is closely related to economic policies. Protecting the environment and natural resources, preventing pollution and other social effects of pollution is an important principle in developing the national economy, however, this principle was not properly maintained when economic policies were worked out in the past. As a result, environmental pollution and damage to the natural resources in our country have not so far been effectively controlled.

Economic policies are reflected by the national economic plans. When plans were worked out in the past, other than subsidiary investment being given to the large or middle-scale capital construction projects and some old enterprises for preventing and controlling pollution, no targets for environmental production have ever been set in the production plans and included in the main targets for the national economy. When decisions were made on the distribution of industry, the selection of factory building sites and other important links in the capital construction, the effect on the environment was not taken into account as an important principle. When there were breaches in the plans, recovery projects and projects for preventing pollution were always the objects being cut for the purpose of giving priority to maintaining priority projects. As for natural resources, attention was merely paid to their exploitation and utilization rather than their protection and multiplication. Exploitation and utilization was also unitary but not comprehensive. All this has given rise to an imbalance between economic development and environmental protection.

In order to solve these problems, it is necessary, first of all, to deepen economic workers' understanding of the importance of the environmental problem. They should treat this problem as an important component of the national economy. consciously coordinate the relationship between production and environmental protection and work in accordance with the objective laws governing the environment.

The environment, including water, atmosphere, soil, living beings, mineral resources and other natural conditions, forms the material resources for the subsistence of mankind and for social production as well and thus the environment is a factor of productive forces. Social production is, to the final analysis, a course of taking these resources from nature and processing them into the means of subsistence and production needed by the people. The development of production depends to a large extent on the exploitable reserves of the irreplaceable resources and the capacity of regenerative multiplication of the renewable resources. The process of production is simultaneously a process of consumption, in which a portion of natural resources is transformed into products while another portion of natural resources is converted into waste and returned to the natural environment. It is in this way that social production and consumption exchanges materials and energy with the environment. Reproduction can therefore be smoothly carried out. The pollution and damage of the environment mainly refers to the phenomenon that the speed of acquiring resources from the environment by social production exceeds the speed of regeneration and multiplication of resources, thus resulting in a sharp reduction in the reserves of resources, and the forest, soil and water resources being damaged; and the phenomenon that discarded wastes exceed the capacity of the natural environment, thus polluting the atmosphere, water and soil, and causing an ecological imbalance in nature. This is a retribution inflicted by nature when economic development is carried out against ecological laws. The pollution and damage to the environment not only harm the health of the people, but also damage the material basis for social reproduction, thus bringing about huge losses in society. According to the estimation in the developed industrial countries, in the 1970's, the social losses caused by environmental pollution in these countries amounted to 3-5 percent of their gross national product. This did not include the influence of the damage of resources, which was far greater than the investment in preventing and controlling environmental pollution. Obviously, it is not an all-round approach to regard the environmental problem as merely a problem concerning social welfare or environmental sanitation. Instead, it is a complex problem related to the economic, technological and social fields in the national economy.

The problem of rationally utilizing environmental resources is closely bound up with social systems and the purposes of production. Engels has pointed out that there are two basic reasons why mankind's production activities cause damage to the environment: 1) The people have not deeply understood the natural laws. They cannot correctly foresee the immediate and far-reaching influences caused by the interference in nature by their production activities. 2) The existing modes of production "are all aimed at acquiring the most direct and the nearest beneficial results of labor." ("Selective Works of Marx and Engels" Vol 3 p 519) In the capitalist society, the purpose of the capitalist in developing production is to achieve maximum profits. Their only concern is the nearest and the most direct results. They never take into account the relatively far-reaching influence on nature and society. Nature is treated by them as a place for dumping industrial wastes, and natural resources are wantonly abused. The larger the scale of production, the greater the pollution and damage the environment will suffer. China is now practising the planned economy, which, as Engels said, "enables industry to be distributed throughout the country in accordance with the principle that industry is developed in a manner fitting itself the best and other production factors can also be preserved and developed." As long as we pay attention to this problem when working out economic policies, conscientiously use the planned economy to coordinate the relationship between economic development and environmental protection, rationally exploit natural resources rather than one-sidedly intensify the exploitation, and adopt effective measures to protect environment and natural resources in capital construction and production, the phenomena that the environment in China is polluted and damaged can be gradually straightened out.

How should we coordinate the relationship between economic development and environmental protection?

First, the balance between environmental protection and production construction should be taken as an important item in the overall balance of the national economy. This includes: 1) The balance between the consumption of economic resources and the capacity for replenishing and regenerating by multiplying these resources, which ensures the interminable utilization of the resources; and 2) The balance between the discharge of waste and the capacity of the natural environment. By keeping this balance, we can prevent the deterioration of the environmental quality and guarantee the quality of people's livelihood.

Second, conforming economic development with ecological laws should be taken as an important item in the state's economic policies. For this purpose, great efforts should be devoted to develop and spread the technology which gives rise to few or no wastes in production, complies with ecological laws and recycles and reuses wastes. When decisions are made on industrial distribution and sites for industrial construction, the influence on the environment should be properly taken into account. If severe unfavorable influence will be caused on the environment, construction should be stopped immediately.

Third, industrial technical transformation should include the control of pollution. Technical transformation can help stop or reduce waste discharges in technological processes, so as to raise utilization ratios of various material and energy resources.

Fourth, targets for environmental protection should be included in state plans and made subject to inspection. Industrial and mineral enterprises should all bring environmental protection into the sphere of production management.

Of course, contradictions cannot be denied between environmental protection and economic development. They are opposites which promote and restrict each other. It is impossible to keep the environment free from any pollution in the course of developing the economy. Within the limits of a given period and scientific and technological conditions, it is also impossible to prevent natural resources and their regenerative capacity from being reduced and damaged in the course of exploitation. The problem is how to weigh the relationships between immediate and far-reaching interests and between partial and overall interests. This calls for a summing-up of experience and an analysis of costs and benefits, so as to find out the most economical and reasonable coordinated solution. At the same time, it is necessary to strengthen scientific research to reduce environmental pollution and resource damage to a minimum.

II

Last year, the State Council pointed out in the "Decision on Strengthening the Work of Environmental Protection During the Readjustment of the National Economy" that environmental protection work should be handled by linking it with various economic policies and measures in economic readjustment. This is the starting point of working out environmental policies.

The pollution and damage to the environment in China accumulated for a long time in the course of construction. It is painstaking work to solve this problem. The reasons for this environmental pollution and damage, besides the problems in understanding and economic management, can mainly be listed as follows: First, in most industrial and mineral enterprises, the level of production and technology is backward, equipment is simple and crude, and the utilization ratio of resources is low. A great deal of valuable resources cannot be fully utilized but are treated as wastes, and are thus polluting the environment. The utilization ratio of energy resources is less than 30 percent, but smoke discharge is many times more than that in other countries. Many chemical products can only utilize one-third of their raw materials. The consumption of water and electric power by quite a few products is several times, even scores of times, higher than in other countries. Effective composition of pesticides and chemical fertilizers is small. Effective composition for pest control accounts only for 14-15 percent in BHC [benzene hexachloride] while ineffective composition, which is the most harmful to people and animals, accounts for a large percentage. In addition, pesticides and fertilizers being spread on farmland are mostly washed away, into the environment, thus bringing about severe pollution.

Second, city planning has been neglected and industrial distribution is not reasonable. This has aggravated the harm of pollution. Some factories causing serious pollution have been set up in densely-populated residential areas, scenic spots and tourist resorts and even in the upper reaches of rivers. For example, in the ancient garden town of Suzhou City, which is also a cultural centre with a history of more than 2,400 years, about 500 factories have been concentrated in an area of less than 28 square kilometers. In addition, 21 chemical factories which cause grave pollution are set up around the urban areas; 10 printing and dyeing mills are set up in the downtown area; and 3 paper mills are set up in the upper reaches of the rivers. As a result, this disarrangement, with industrial areas mixed with residential areas and scenic spots and chimneys mixed with pagodas, has severely damaged the natural beauty of this picturesque city.

Third, urban public facilities in cities are backward. In the 224 cities throughout the country, only 50 percent of areas have a sewer system. There are only 37 urban sewage treatment plants in the whole country. Only 2 percent of urban sewage can be treated while the other 98 percent is discharged into rivers without being treated, thus resulting in a great reduction in fish and affecting the quality of drinking water. Not many large and medium-sized cities in China have heat and power plants and gasworks, along with the continuous increase in urban population and the expansion of urban areas, the harm to the atmosphere and water pollution caused by the urban wastes as well as noise pollution will become more and more prominent.

Fourth, the environment is damaged due to the irrational exploitation of natural resources. Examples can be found from the abusive exploitation of mineral resources; the blindness in reclaiming land from beaches; the excessive extraction of groundwater; and the excessive exploitation of forest reserves, all this has not only damaged natural resources, but has also unfavorably affected the environmental quality.

To solve these problems, in addition to deepening understanding and adopting necessary management measures, a certain economic material force is also needed. To handle environmental protection in China, we should proceed from actual conditions, act according to our capacity in a planned way and carry out this task in key units and by groups. We cannot set an unrealistic target which is not part of China's realities and goes beyond the objective feasibility, at the same time, neither can we exclusively transform the part of the environment which has been polluted or exclusively arrange facilities for purifying pollution. This will result in high costs and slow effects. The work of environmental protection should be linked with enterprise reorganization and management improvement, so as to stop the large quantities of pollutant discharge due to artificial factors. It should be linked with technical transformation, so as to fundamentally control the rise of pollutants. It should also be linked with city construction and transformation, thus adjusting the irrational industrial distribution and structure, and also linked with the rational utilization of natural resources, so as to maintain the regenerating and multiplying capacity of the resources and maintain the ecological balance. The environment should be gradually improved, along with economic development and protecting and improving the environment, we can promote sustained economic development.

III

All departments, trades and enterprises are involved in environmental protection. The state should, by working out the policies concerned, require all departments, trades and enterprises to take environmental protection into account along with various activities. Besides studying the overall environmental policies, concrete policies in the aspects of economy and technology should also be studied to prevent pollution and protect natural resources, so that the best environmental results and economic results can be achieved with the fewest funds.

Policies should be shaped for controlling pollution in industrial and mineral enterprises. Industrial and mineral enterprises are the key sectors in pollution control. The past method that efforts are merely given to transform the polluted environment should be changed. Through technical transformation, we can strengthen the environmental management in enterprises and eliminate or reduce pollutant discharges in the course of production. This can help to fundamentally resolve the pollution problem as well as improve economic results and increase social wealth. The Shanghai Gaoqiao Chemical Plant has previously caused serious pollution. It had spent more than 3 million yuan to build 4 sets of polluted-water treatment facilities before 1978, while only 8 percent of industrial wastewater could be treated. Since 1978, this plant has strengthened the management and embarked on some small technical transformations which have enlarged the treated portion of wastewater to 86 percent. In addition, they can recover 2,000 tons of chemical raw materials and products from wastewater in a year. These recoveries create a value of 3.4 million yuan.

What policies should the department in charge of environmental protection adopt to encourage and guide the enterprises to control pollution by linking this work with production? The Chemical Industrial Bureau of Shenyang has tried a policy of "exerting control on gross quantity of pollutants" in some enterprises. After analyzing specific production technology of each product and calculating the use of materials, they laid down the requirements for the enterprises to control the gross quantities of pollutant discharge. Results of the experiment have proved that this policy can make the enterprises implement measures concerning aspects of management, and procedures in production and technology, so as to closely combine production management of enterprises with environmental protection. This experience needs to be further summed up, perfected and promoted.

Policies should be shaped for utilizing and conserving natural resources. For a long time, people always treated nature as an inexhaustible and free resource. Their wanton exploitation has caused a great waste of resources. In my opinion, environmental pollution is, in fact, a consumption of air, water and other resources. So, polluters must take the economic responsibility to recover the polluted environment. In order to conserve water, mineral and forest resources, exploiters must bear the expenses in exploring new resources and regenerating resources, and they can never utilize these resources gratis. Imposing a resource conservation tax or setting up funds for renewing resources can be considered. This could bring about the following advantages: 1) It can prevent abusive exploitation. 2) It can promote the reutilization of wastes, as prices of raw materials are raised. 3) It can induce the regeneration of resources. In recent years, some municipalities have charged for the use of groundwater; others have laid down control quotas for the use of surface water. This has effectively forced enterprises to save water and conserve water resources.

Policies should be shaped for controlling air pollution. In the past, the main efforts were given to reforming boilers and municipalities have spent a lot of money on this item, with a certain result achieved, but viewing the urban environment as a whole, the result is not obvious. In recent years, many scientists and technicians have suggested solving the air atmosphere pollution problem by changing the composition of fuel. However, according to our material conditions, coal will remain a major fuel for a fairly long time. The methods of changing fuel composition or building heat and power stations and gasworks to improve atmosphere quality will not be practical in the near future. During the current economic readjustment, our policies for controlling air pollution should be based on fully raising the effective utilization ratio of the existing energy resources. There is great potential in this field. The high-quality coal with low sulphuric and volatile composition can be preferentially supplied for civil use. Surplus heat in factories can be fully utilized. Other measures, such as linking a group of boilers for heating and rationally utilizing petroleum gas, can be adopted. If the utilization of heat energy in China can be raised from the current 30 percent to 50 percent as in Japan, that equals a savings of several hundred million tons of coal and reduces by several million tons smoke discharge. Air pollution can thus be obviously lightened. As an industrial city, Fushun has wasted a great deal of energy. In this city, if utilization of heat energy can be raised to 50 percent, air pollution in this city caused by 1.1 million tons of coal a year will be reduced. In recent years, Fushun City has linked the elimination of air pollution with the economy of energy. They have energetically developed the utilization of surplus heat and the recovery of combustible gases: heat energy created by power stations and industrial surplus heat are used for heating. They are building a central heating system by making use of the water cycling system in power stations. They are preparing to recover the gas discharged from coal mines and the petroleum gas with high calorific value from oil refineries to supply for civil use, thus basically eliminating the pollution by smoke from kitchen chimneys. After the accomplishment of these projects, they will not only save several hundred thousand tons of coal, they will also remarkably decrease air pollution.

Policies should be shaped for controlling water pollution. Quite a few technicians have suggested lightening pollution in rivers by building sewage treatment plants. But the capital construction of these plants needs a large amount of investment. In addition, industrial wastewater is mixed up with common sewage, and this makes it difficult to achieve an effective result in treatment. Therefore, during the current economic readjustment, it is not realistic to lighten pollution in rivers by relying on building a large number of sewage treatment plants. Investigation in many areas has shown that, in addition to the wastewater discharged from urban industry and life, river pollution is also related to the reduction in river discharge. For example, the Huangpu River in Shanghai becomes black and foul-smelling; the Songhua River in Jilin Province becomes polluted in dry seasons; the pollution in the Suzhou Canal is aggravated; and all cases are related to the reduction in river discharge. The reasons for the reduction in water discharge of rivers are complicated. The most important reason lies in the excessive use of water by agriculture. So, we cannot simply tackle water pollution. Instead, we must associate this work with rationalizing the utilization of water resources. This needs a unified plan, because industry, agriculture, communications and transport, the aquatic products industry and other departments are all involved in the use of water resources, and a river generally runs across different administrative regions. It is imperative for the state to coordinate a solution and organize regional planning and planning in river drainage areas. The emphasis in reducing pollution sources should be placed on the economy of water consumption. If the cycling system is in common use in industry, the utilization ratio of water in industry can be raised and the water consumption ratio can be lowered to a progressive level. At the same time, some valuable resources in wastewater can also be recovered.

Economic policies form an important means for environmental management. In the first 2 years, the state has introduced the policy of granting awards to those who achieve good results in comprehensive utilization. Many provinces and municipalities have specified methods to charge the enterprises for discharging pollutants beyond the limits set by the state, and impose fines for causing pollution accidents. The results of experiments have proved that these economic policies can give a certain impetus to the enterprises to do a good job in controlling pollution. These should be earnestly summed up and promoted. Henceforth, the reform of the national economic system will give enterprises more decision-making power. When we exert planned management on the environment, more attention should be paid to studying the policies for environmental protection, so as to push the enterprises to step up pollution control, and to correctly handling the relationship between the enterprise interests and the state and people's interests, so as to coordinate economic development and environmental protection.

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LINKING ENVIRONMENTAL PROTECTION TO ECONOMIC READJUSTMENT STRESSED

Lanzhou GANSU RIBAO in Chinese 23 Apr 82 p 4

[Article by Shi Zhengxin [2514 2973 2450]: "Economic Readjustment and Environmental Protection"]

[Text] Industrial and agricultural production develop within a definite environmental space as a result of human productive activity utilizing various types of environmental resources. The various types of meddling in the environment by man's development and utilization of natural resources and his productive activities have caused environmental pollution of the atmosphere, water, soil, photochemistry, noise and the destruction of forests, grassland, minerals and bodies of water and other natural resources. Today, the environmental problem is not only related to industrial and agricultural development, it also threatens the safety of humans themselves. Protecting the environment is to protect mankind and the means of human existence and production, while promoting productivity.

Environmental protection covers a broad area. In general, it involves following the laws of nature and economic laws. On the one hand, it rationally develops and utilizes natural resources and prevents pollution and destruction of the environment and maintains ecological balance, and on the other hand, it covers pollution and destruction of the environment and attempts to restore the environment. To carry out environmental protection in these two aspects requires a definite amount of materials, manual labor and money. Yet we are in a stage of economic readjustment and the state cannot invest more funds in environmental protection. Under a fixed investment in environmental protection, how can we make it more beneficial, how can we handle environmental protection work during economic readjustment, spend less and do more, and realize unified environmental and economic achievements?

First, in readjusting the scale of capital construction, we must reduce those enterprises which have exhausted their resources, whose products are lagging in sales, which cause serious pollution and do not have the ability to treat it. Everyone knows that a rational industrial distribution must possess good material conditions such as minerals and raw materials as well as socio-economic conditions for transportation, marketing and sales, electric power and labor. In the past, we were anxious to realize achievements in economic construction and neglected macrocosmic economic results. We blindly developed mines and established factories without clearly understanding resource and hydrogeological conditions, or we had no design, equipment and technology to control pollution and treat the "three wastes" while building new projects, rebuilding and expanding. As a result, state funds were wasted, natural resources were destroyed and wasted also. In this readjustment, we should be determined to eliminate these factories and mines; those that have been started should be terminated. Those that have been built and have begun production should be shutdown, terminated, combined and transferred under a uniform plan. In non-productive capital construction, we must carry out matching projects in urban administration in conjunction with urban planning. Commune brigade enterprises in farm villages must pay attention to solving the technical and economic policy problems related to environmental protection. We must include environmental protection in capital construction, implement measures to control the "three wastes" and design, construct and begin such measures simultaneously with the main construction projects so that capital construction can adhere to the principle of rational development and utilization of resources, conserve the amount of work and realize great results economically.

Second, we must readjust the agricultural structure and restore the ecological balance. The structure of agricultural production is formed by man's purposeful productive distribution. Whether the proportional relationship among agriculture, forestry, livestock production and their internal components is rational is an important factor that affects dynamic balance in the agricultural ecological system. For a long time, we did not do things according to the laws of ecological balance. We destroyed forests and grasslands at will, we reclaimed land to plant food grains, we shunned diversification, we destroyed the internal relationship of mutual dependence and mutual stimulation among agriculture, forestry and livestock production, thus leading to an imbalance of the functions of material and energy regeneration and compensation in the agricultural ecological system. Therefore, agricultural productivity dropped, and agriculture, forestry and livestock production were damaged. A vicious ecological-economic cycle was created. Now, people have taken more initiative in readjusting the productive structure of their own localities and have paid attention to restoring and maintaining the balance of agricultural ecology. They have paid attention to the main body of the agricultural ecological system--the expansion and cultivation of forests, and they have made the proportional relationship between agriculture, forestry and livestock production and their inner components more rational according to the laws of ecological balance. Agricultural ecological balance is the prerequisite of agricultural economic development; it is also the long-term plan of strategic significance in the entire national economic development. Since last year, every prefecture and county in Gansu has launched agricultural zoning work. They fully utilized and protected natural resources and prevented environmental pollution, comprehensively arranged and set up a productive structure in agriculture and an economic structure in farm villages, carried out short-term, medium-term and long-term plans, drew up overall programs according to the demands of the laws of proportional development and on the basis of overall and in-depth surveys and research to study the climate, soil, hydrology, forests and various socio-economic resources of the localities. Undoubtedly, this work will have an active promotional function in restoring and establishing a new ecological balance within the whole province.

Third, we must change the structure of energy sources and reduce primary pollution. In production and in living, different properties of energy sources and their inappropriate utilization are the reasons that produce carbon monoxide, nitrogen monoxide, sulphur dioxide and such primary pollutants. At the same time, because energy sources cannot be fully utilized, loss and waste are created. Therefore, changing the structure of energy sources and their method of utilization are important measures to reduce and prevent environmental pollution and conserve energy. Readjusting the structure of energy resources is a part of readjusting the national economic structure. Readjusting the structure of energy resources is a part of readjusting the national economic structure. Readjusting the structure of energy sources, in the sense of macroeconomics, mainly involves maintaining a definite ratio between the productive departments that consume a lot of energy and the departments that consume little energy through readjustment of the economic structure of the sectors. It involves readjusting the structure of power production and increasing the proportion of non-polluting energy sources among all energy sources. It involves overall technical improvement of original equipment and technology of the various sectors of the national economy, and it involves improving the rate of utilization of energy resources. In the microeconomic sense, it involves improving business management of enterprises, conservation of raw materials to conserve energy consumption, to develop and to use substitute materials and regenerative energy sources that can be utilized in production, so that energy sources can be rationally consumed in every productive link. In the consumption of energy by residents, methods to change stoves, to realize centralized heating and to substitute bitunimous coal with anthracite should be carried out to reduce pollution by smoke and dust from coal and to conserve the use of coal for living. Lanzhou City stressed the reform of ways to utilize energy resources in its efforts to eliminate smoke and dust. It popularized the "retroactive heating method", improved heat efficiency, conserved fuel, and reduced the release of harmful substances.

Fourth, we must handle the work of developing potential, reformation and improvement well and prevent running, spewing, dripping and leaking. The sources of environmental pollution by China's industries are mainly caused by running, spewing, dripping and leaking in production and management. During the period of readjustment, industrial enterprises have expanded reproduction by changing from taking extension as the main effort to emphasizing internal content as the main effort. Existing enterprises have mainly increased output and improved the labor production rate through developing potential, reformation and improvement. In the course of developing potential, reformation and improvement, we should change the backward technological flow processes that cause running, spewing, dripping and leaking and obsolete machinery and equipment, and we should reform the facilities and work procedures that produce the "three industrial wastes". For example, we can use closed-circuit recycling methods to purify sewage produced in industry within the factories and to repeatedly utilize it. We can renovate technology, realize zero release of gases, liquids and other solid pollutants in the production process, etc. The reformation of production technology must be carried out together with the reformation of the management system. Enterprises that implement the industrial economic responsibility system should include environmental protection as an important aspect of it. The consumption of raw materials and fuel must be strictly measured, inspected and supervised. The system of personal responsibility must be strict, and economic rewards and punishment must be implemented. In addition, we must also establish and perfect the environmental monitoring system, implement graduated control and management, launch competitions to promote clean shops and factories, and combine production management and environmental management. Visible results can be realized through the various methods described above to control the "three wastes", develop comprehensive utilization and reduce the rate of leakage of existing facilities.

In general, the goals of economic readjustment and environmental protection are to better develop production and guarantee the realization of the basic economic laws of socialism. Their goals are entirely consistent. In practice, both can be mutually promoting. The achievements in environmental protection not only benefit improvement and beautification of man's residential and working environments, they also produce direct economic results through conservation and reduction of consumption. Therefore, as long as the leadership pays attention, arranges efforts uniformly and implements forceful measures, environmental protection work can be handled well during economic readjustment.

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NEW MINISTRY OF ENVIRONMENTAL PROTECTION TO EMPHASIZE OVERHAULING CONSTRUCTION INDUSTRY

Beijing RENMIN RIBAO in Chinese 10 May 82 p 2

[Article: Spokesman of Ministry of Urban and Rural Construction and Environmental Protection Interviewed]

[Text] The newly established Ministry of Urban and Rural Construction and Environmental Protection has begun working, it is the most recently established ministry within the state organs. What comes under its jurisdiction and how is it going to operate? In an interview by our reporter, a responsible comrade of the ministry discussed the following matters.

According to this responsible comrade, the newly established Ministry of Urban and Rural Construction and Environmental Protection is an agency of the State Council in charge of the work in such areas as urban and rural construction, environmental protection, the construction industry, as well as surveying and mapping. Its principal task is to organize and direct the planning and construction in urban and rural centers of the whole country and the control of environmental pollution and destruction in accordance with the programs and policies of the Party Central Committee and the State Council, and the social and economic development plans of the state for the purpose of creating better production and living environment for both the urban and rural population.

In the last 32 years, both urban and rural construction in our country has developed by leaps and bounds. Now we have about 230 cities, over 3,200 towns and county government seats, plus many rural village centers and hamlets. There have been new developments in urban construction and speedy growth of rural construction since the 3rd Plenum of the 11th Party Congress. Residential construction in China has been growing at a rate of 140 million square meters per annum for cities and towns and 460 million square meters per annum for the villages. The programming, planning and construction are such demanding tasks that it is necessary to have a unified leading organ.

Owing to undue emphasis on industrial construction in our economic program, there has been a tendency all these years to lose sight of urban and rural construction. Many cities have been developing blindly without any planning or coordination. City government and utility services still face many tough problems. Lack of a special administrative agency and lack of proper guidance all these years have led massive and expansive rural construction to grow at variance with urban construction. Uncontrolled occupation of farmland for massive construction in townships and villages without planning still poses a serious problem. The newly established Ministry of Urban and Rural Construction and Environmental Protection is expected to assume unified administration of the planning and construction in both cities and rural areas throughout China. This important decision is reached by the Party Central Committee and the State Council after summing up over 30 years of experience in our economic construction. It will strengthen the leadership over urban and rural construction, and combine economic construction, urban construction and rural construction to work out comprehensive development programs, construction plans and measures of execution for all the cities, counties, townships and villages of all sizes throughout China.

The responsible comrade said another important task of the Ministry of Urban and Rural Construction and Environmental Protection is to protect the environmental quality of the whole country. Henceforth, it will strengthen the guidance, supervision and inspection of the environmental protection work, and will combine urban and rural development, industrial construction and environmental protection in order to carry out unified programs covering urban, rural and industrial environment. It will step up all anti-pollution measures to protect the quality of water, the atmosphere, the natural environment and to maintain ecological balance. Furthermore, it will step up the protection of historic cities, historic structures and parks, and scenic spots. It will improve earthquake-proof construction and civil air defense.

It is necessary to capitalize on the role of the construction industry in order to manage our urban and rural construction well. The leading comrade of the Central Committee has said on many occasions that we should pay attention to the construction industry and find ways to revitalize it. Although the construction industry has grown very fast since the founding of the People's Republic, it still does not have unified guidance and administration for its several million construction workers. The Ministry of Urban and Rural Construction and Environmental Protection which is to take charge of the construction industry, should abide by the instructions given by the leading comrade of the Central Committee to look for solutions to those problems which have emerged as the construction industry grew, organize its work force and revitalize the industry.

Surveying and mapping which render a vital service to state construction ought to be strengthened. Now, since there is a great demand for surveying and mapping service in resources investigation, agricultural zoning and urban planning, the most important thing is to map out the production tasks of surveying and mapping and the guidance of its operations. It is also urgent to study and formulate surveying laws and regulations as well as the technical standards for the whole country.

Finally this responsible comrade said the tasks of the Ministry of Urban and Rural Construction and Environmental Protection cover a wide range of subjects which are comprehensive in nature. It has to strengthen cooperation with other related departments in many areas of its work. It has to develop local enthusiasm. All matters which should be handled by local governments are to be managed by the localities. The work efficiency of this ministry should noticeably improve.

5360
CSO: 5000/4049

STATE COUNCIL REGULATIONS MARK CRACKDOWN ON POLLUTION OFFENDERS

Beijing JIANKANG BAO in Chinese 25 Mar 82 p 2

[Article: "Provisional Measures for Levying Pollution Charges and Criteria for the Charges"]

[Text] The full text of the "Provisional Measures to Levy Pollution Charges" issued by the State Council is as follows:

Article 1. This measure has been drawn up according to Article 18 of the "Environmental Protection Laws of the People's Republic of China (Trial)" "to levy charges for pollution according to the amount and concentration of pollutants released beyond the criteria for the release of pollutants allowed by the state."

Article 2. The purpose of collecting charges for pollution is to encourage enterprises and business units to strengthen management and administration, conservation and comprehensive utilization of resources, control pollution and improve the environment.

Article 3. All enterprises and business units shall implement standards related to the "trial standards for the release of the 'three wastes'" promulgated by the state. The people's governments of the provinces, autonomous regions and cities under direct jurisdiction which have approved and promulgated regional standards for the release of pollutants shall be implemented as regional standards for the release of pollutants by the enterprises and business units in the respective localities.

Charges for pollution shall be levied on enterprises and business units that release more pollutants than the amounts allowed by the above standards. Charges for pollution by smoke and dust from heating boilers shall be levied on other polluting units.

The charges for pollution submitted by the polluting unit shall not exempt such units from their responsibility of treating pollution, their responsibility to compensate for damages and their other legal obligations.

Article 4. Polluting units shall truthfully report and register with the local environmental protection departments the types, amounts and concentration of pollutants released. The information shall serve as a basis for the levy of charges for pollution after approval by the environmental protection departments or by their designated monitoring units.

Article 5. The criteria for levying charges for pollution shall be implemented according to the schedule attached to this measure. The criteria for charges levied on units in large and medium cities where individual industries are concentrated and where pollution is particularly serious shall be appropriately adjusted after approval by the office of the leading group in environmental protection of the State Council.

Charges levied on polluting units that release two or more harmful substances in waste water, waste gases and waste residue from one polluting source shall be calculated at the highest fee.

Criteria for charges levied on additional items included in regional standards for the release of pollution shall be determined by the people's governments of the provinces, autonomous regions and cities under direct jurisdiction according to the accompanying schedule of this measure.

Article 6. Polluting units that have not met the standards for releasing pollutants after paying the charge for pollution shall be subjected to a higher annual fee of 5 percent more starting from the third year after the first levy. Polluting units that have carried out measures of treatment, that have strengthened management and that have met the criteria for the release of pollutants or that have visibly reduced the amount and concentration of pollution can submit an application to the local environmental protection department to request termination or reduction of the charge after such department has monitored the applicant and has proven that its pollution has met the standards.

After promulgation of the "Environmental Protection Law of the People's Republic of China (Trial)", double charges shall be levied on all engineering projects that release pollutants surpassing the allowable standards even though they are engaged in new construction, expansion, remodelling and engineering projects to develop potential, to renovate and to rebuild facilities, as well as facilities that do not operate or that have dismantled pollution treatment facilities and that release more pollutants than allowable by the standards.

Each province, autonomous region and city under direct jurisdiction can establish other regulations to increase or reduce such charges according to the actual situation.

Each province, autonomous region and city under direct jurisdiction can establish other regulations to increase or reduce such charges according to the actual situation.

Article 7. Charges for pollution shall be collected monthly or quarterly. Polluting units, regardless of their subordinate and ownership relation shall pay fees for pollution to designated banks within 20 days after receipt of the notice to pay issued by the local environmental protection department. Units that are overdue shall be charged an additional late payment fine of 0.1 percent.

Departments of the Central Government and provincial departments (autonomous regions, cities under direct jurisdiction) that pollute shall pay the charges to provincial level financial offices. The charges for pollution by other polluting units shall be paid to the local financial offices of the region. Charges for pollution levied in cities where enterprises subsidiary to the Central ministries and provinces are concentrated can be submitted to local financial offices after approval by the provincial people's governments.

Article 8. The charge for pollution submitted by the enterprises can be listed as an item of production cost. The portion of the charge above the standard charge shall be listed as an item of the proportional profit of enterprises of the sytem of ownership by the people or as an item of the capital funds of the enterprises. Enterprises of the system of ownership by the people implementing "paying taxes out of profits, independent accounting, bearing their own profit and loss" and enterprises of the collective ownership system shall include such charges as an item of expenditure after submitting income tax. Charges for pollution submitted by business units shall first be paid out from the unit's net remains from contract work and from funds not included in the budget. If such funds are insufficient, the charges can be included as a business expense of the unit.

Article 9. The collected charges for pollution shall be included in the budget as funds to subsidize environmental protection and managed as a special fund. It shall not be distributed proportionally by the system.

Funds subsidized for environmental protection shall be uniformly arranged and used by environmental protection departments and financial departments. Special funds must be used for special purposes. Funds should first be collected before they are used.

Expenditures must be based on income. The funds should not be overspent or used for other purposes. If there are remaining funds, they can be allocated for use the following year.

Article 10. Subsidies for environmental protection should mainly be used to subsidize key polluting units to treat the polluting source and to implement comprehensive measures of treatment of environmental pollution.

When the polluting units implement measures to treat pollution, the units should first utilize their own funds. If there is indeed a shortage of funds, they can report to the supervisory departments for review and summarization and then request the environmental protection departments and the financial departments to provide a fixed amount of subsidy from the funds subsidized for environmental protection. This subsidy generally shall not be higher than 80 percent of the charges for pollution submitted by the units. Eighty percent of the funds subsidized for environmental protection can be handed over to the supervisory bureaus for them to subsidize enterprises and business units to treat the polluting sources, and the environmental protection departments and financial departments shall monitor the treatment. Units belonging under Section 2, Article 6 shall not be subsidized.

Funds subsidized for environmental protection can be appropriately used to subsidize environmental protection departments to purchase monitoring instruments and equipment, but the subsidy shall not be used as administrative funds and non-business type expenditures such as building office buildings and dormitories by the environmental protection departments themselves.

Article 11. Funds to subsidize environmental protection shall be monitored and provided by construction banks.

Article 12. The people's governments of each province, autonomous region and cities under direct jurisdiction can draw up concrete methods of implementation according to this method.

Article 13. This measure shall be implemented beginning 1 July 1982.

The accompanying schedule "Criteria for Levying Fees for Pollution" of the "Provisional Measure to Levy Fees for Pollution," stipulates: A charge of 0.04 yuan shall be levied on each kilogram of waste gas containing sulfur dioxide, carbon disulfide, hydrogen sulfide, fluorides and other harmful substances released over the allowable standards. A charge of 0.02 to 0.10 yuan shall be levied on each kilogram of powder and dust from production such as fiberglass and powder and dust from steel smelting furnaces released over the allowable standards. A charge of 0.15 to 0.20 yuan shall be levied on each ton of waste water containing such harmful substances as mercury, cadmium, arsenic, lead and other inorganic compounds and hexavalent chromium compounds with a concentration within 5 times over the allowable standards. When the concentration is over 50 times the allowable standard, a charge of 0.90 to 2.00 yuan per ton shall be levied. For each ton of waste water, a charge of 0.08 yuan shall be levied when the concentration of pathogens surpasses the allowable standard. A charge of 36 yuan shall be levied on each ton of soluble toxic waste containing mercury, cadmium, arsenic, hexavalent chromium, lead, cyanides, yellow phosphorus and other soluble toxic waste dumped or released into bodies of water. A monthly charge of 2 yuan per ton shall be levied on each deposit of toxic waste described above without waterproof and leakage-proof measures. The deposits of such toxic waste shall be immediately stopped and removed by order. The accompanying schedule also stipulates in detail the charges to be levied for the release of other harmful substances or concentrations of harmful substances surpassing the allowable standards.

9296
CSO: 5000/4043

INDUSTRIAL POLLUTION MEETING CLOSES IN BEIJING

OW210835 Beijing XINHUA Domestic Service in Chinese 1146 GMT 20 Aug 82

[Excerpts] Beijing, 20 Aug (XINHUA)--A national meeting to exchange experiences in the prevention and treatment of industrial pollution ended today in Beijing. The meeting pointed out: preventing and treating industrial pollutants is a social duty enterprises should fulfill. The development of production should go hand in hand with environmental protection. Vigorous efforts should be made to prevent and treat pollutants in order to markedly improve our country's environment in a fairly short time.

According to information obtained at the meeting, environmental pollution in our country is caused mainly by the three wastes (waste gas, waste water and industrial residue) discharged by industrial enterprises. For a long time, people in various circles lacked a clear understanding of the importance of environmental protection. When they were built most factories failed to take technical measures to treat pollutants, and subsequently they have been discharging pollutants into the environment. As a result, environmental pollution in our country has become rather serious although our level of industrial development is still low. This has become an acute problem in our country's modernization drive. [passage omitted]

The meeting, which was jointly sponsored by the state Economic Commission and the Ministry of Urban and Rural Construction and Environmental Protection, was held to exchange experiences in the prevention and treatment of industrial pollution and adopting further measures in this regard. A responsible person of the state Planning Commission also attended and addressed the meeting. [passage omitted]

The meeting set requirements for the prevention and treatment of pollutants discharged by industrial enterprises. The requirements mainly call for the industrial enterprises' leading cadres concerned and their workers and staff members to gain a clearer understanding of the importance of environmental protection, to correctly handle the relationship between the development of production and environmental protection, to make overall plans and take all factors into consideration and to coordinate the development of production with environmental protection. At the same time, it is also necessary to make plans for the prevention and treatment of industrial pollutants and to formulate corresponding technical and economic policies.

CSO: 5000/4072

NEW STUDIES WILL BE BASIS FOR FORECASTING URBAN POLLUTION FROM BURNING COAL

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 2, 1982 pp 14-16

[Article by the Atmospheric Pollution Evaluation Group of the Third Laboratory of the Beijing City Environmental Protection Institute: "Exploring the Classification of Polluting Sources from Burning Coal in the City"]

[Text] Coal constitutes over 80 percent of the energy resources in China. Viewing the composition of energy consumption of urban residents in Beijing and Shanghai, we see that the energy used by China's urban population is mainly from burning coal (See Table 1).

Table 1. Composition of Consumption of Energy Sources of the Population in Beijing and Shanghai in 1979 (%)

	Total	Coal	Liquefied petroleum gas	Coal gas	Fuel oil	Heat from thermal power plant	Electricity
Beijing	100.0	78.5	5.6	3.4	0.8	5	6.7
Shanghai	100.0	69.0	0.5	16.0	0.5	-	14.0

In most of China's cities, coal constitutes more than 80 to 90 percent of the amount of civilian energy resources consumed. It can be seen that air pollution in most of the cities in China is mainly created by the massive amount of sulphur dioxide produced by burning coal and smoke and dust released into the atmosphere. Therefore, strengthening research in the comprehensive prevention and control of atmospheric pollution caused by burning coal is a very important subject. The study of the polluting sources thus becomes the most important foundation and reference for evaluating and forecasting pollution and for comprehensive prevention and control of atmospheric pollution.

The study of polluting sources includes surveys of polluting sources, classification of polluting sources, examining the responsibility of pollution and finding ways of comprehensive control. In the following, we will use Beijing City as an example and emphasize the classification of polluting sources of burning coal.

According to different requirements, there are many ways to classify polluting sources of burning coal. For example, polluting sources can be classified according to the height of chimneys and the amount of coal consumed, according to the departments that burn coal, according to the characteristics of release, etc. But we believe that whatever classification we use, it should be consistent with the following principles:

1. It should truly reflect the distribution of burning coal at the locality;

2. It should facilitate implementation of plans to survey polluting sources;

3. It should facilitate calculation of a model to provide a simple and necessary model inventory of data of polluting sources;

4. It should facilitate evaluation of pollution;

5. It should facilitate research and the implementation of plans to treat and control pollution.

Classification of the sources of pollution by burning coal:

We have classified the polluting sources into six major categories according to the sales network of coal, actual use according to the types of coal, characteristics of release of pollutants and the departments that use coal in Beijing City.

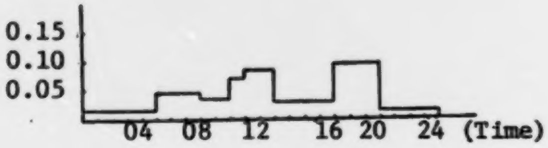
(1) Types of coal used in industrial production; (2) types of coal used for heating; (3) types of coal used for public utilities; (4) types of coal used for household heaters; (5) types of coal for daily use; (6) types of coal used solely by the several major users such as power plants.

The characteristics of this type of classification are as follows:

1. Different types of sources require different types of coal, and the sulfur content is also different. This allows us to select the average sulfur content of each of the different sources. For example: The three major coal users, industrial production, heating and public utilities use bituminous coal while residents and household heaters use anthracite. The difference in the sulfur content of bituminous coal and anthracite is very large. According to surveys, the sulfur content in bituminous coal is 1.1 percent and the sulfur content of anthracite averages 0.3 percent.

2. Such a classification makes it easy for us to determine the distribution of each source in time and space. Because the distribution and sale of coal in Beijing City have a complete system, precision of the survey can be accurate down to each coal user. This allows us to plot the types of coal actually used at each locality in a grid of 1 kilometer x 1 kilometer squares on the map and we can thus draw planar distribution maps of the amounts of coal consumption by the five categories of sources of pollution and one point source.

The variation in the cycles of releasing pollutants by each type of polluting source is a very important factor affecting pollution. Obviously, we must know the coefficient of change of polluting sources with a strong average intensity and a polluting cycle that is as short as possible before we can accurately estimate their probabilities of causing pollution. But in the urban environment where there are many releasing sources and where the situation is complex, it is very difficult to achieve this. The method of classification by the departments that use coal has provided a very convenient condition to solve this problem. We conducted a typical sampling survey of the various polluting sources and obtained a time variation curve of the release of pollutants by the polluting sources. Figure 1 is the daily variation curve of coal used by residents.



3. This classification method makes it easy to determine the height of chimneys. The height of the polluting source is a very sensitive parameter to gauge the distribution of concentration of pollution. But, in an urban environment with many releasing sources of pollution, the height of chimneys is not uniform, and a uniform height of the chimneys cannot be used. If we consider the problem using the actual height of every releasing source, difficulties will result. This method of classification takes the several large power plants as point sources and the actual height of their chimneys is used for calculation. All other polluting sources are surface sources. The coal used by residents in living and for household heaters is burned mainly in flat houses. The average height of the chimneys is 4 meters. The height of chimneys of furnaces burning coal for industrial production, heating and public utilities is not uniform. After surveying, we discovered that there are peak values at 15 meters and at 35 meters. Therefore, we decided to take the average height of the chimneys of surface sources in industrial production and heating as 35 meters and that of surface sources in public utilities as 15 meters. By taking the average height of release of pollutants by each type of polluting source in this way, very convenient utility parameters were provided for calculating a mathematical model.

4. This method of classification has laid the foundation for developing "control zones of multiple sources" in the study of plans to treat and control pollution and plans to evaluate the quality of air in the atmosphere.

This type of classification includes all the departments that use coal in a city, and it makes it easy to determine the time and space distribution of each type of releasing source and the parameters of the characteristics of release. The analytical study of the concentration of pollution in a city using calculated models can be based on the share of pollution borne by each type of polluting source and this enables us to treat targeted sources of pollution and to reform the fuel, thus achieving the goal of reducing pollution. At the same time, it provides a scientific reference for selecting a plan for the rational utilization and control of energy.

For example, on the basis of this type of classification, we obtained the share of sulfur dioxide pollution of each type of polluting source in the city of Beijing during the period when heating was used.

Taking the area within the third boundary, we can see from Table 2 that the share of pollution by the types of coal used for heating is the largest, constituting 34.90 percent, followed by the types of coal used for living, constituting 18.71 percent. Yet the resulting pollution caused by sources of pollution at different heights when the same amount of sulfur dioxide was released was different. We used the "values of the polluting effect of the same amount of pollution" in Table 3 to represent this difference. (See Table 2)

Table 2. Share of SO pollution from various sources during heating period (%)

Share of pollution Source Evaluated zones	Industry	Public utilities	Heating	Living	Point source	Household heating
Entire city	25.99	7.54	32.26	15.78	4.01	14.49
Within third ring	17.99	8.55	34.90	18.71	2.79	17.05
Within second ring	15.33	9.03	32.43	21.24	2.17	19.60

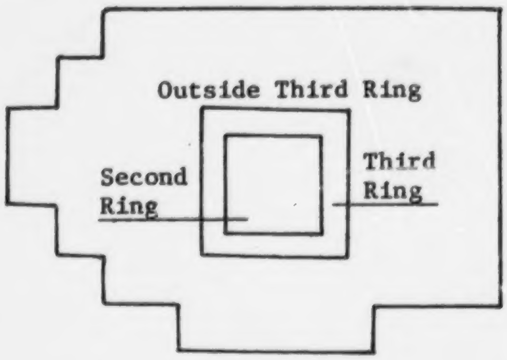
It can be seen from Table 3 that the values of the polluting effect of the two types of 4-meter high surface sources of pollution from living and from household heaters are the largest, followed by the values of the polluting effect of the 20-meter high surface sources of pollution of public utilities. Therefore, they should be considered first in treating pollution. If coal can be replaced by superior quality fuel such as liquefied petroleum gas, piped coal gas, low sulfur and low ash coal, one ton of liquefied petroleum gas can replace 8 tons of coal used for living, 4 tons of coal used by public utilities, and 2 tons of coal used for household heaters. Yet, the use of liquefied petroleum gas to replace coal for household heaters is not practical. If it is used to replace the types of coal used for living, especially if it is used to replace the types of coal used by public utilities, it would be feasible because those sources burn bituminous coal while anthracite is burned for living. The sulfur content of bituminous coal is about 3.6 times that of anthracite.

Table 3. The polluting effect of various sources within the evaluated zones inside the third boundary during the heating period

Source	Height of effective source (meter)	Amount of SO released		Average share of pollution (%) ②	Value of polluting effect ③ = ①/②
		(ton)	(%) ①		
Residents + heaters	4	4491.25	7.08	35.76	5.05
Public utilities	20	2370.68	3.74	8.55	2.29
Industry + heating	50	34506.76	54.38	52.89	0.97
Point of source	>50	22087.89	34.81	2.79	0.08

It can be seen that if liquefied petroleum gas is used as a priority to replace the types of coal used by public utilities, pollution can be reduced and energy resources can be conserved. For the two types of sources in heating and industrial production, centralized heating, dust removing equipment and desulfidation can be used to reduce their pollution of the atmosphere.

We can also draw several zones of polluting sources according to the spacial distribution of the various types of sources and according to need on the basis of this classification to make it easy to control. For example, Beijing city can be divided into the area within the second boundary, the area within the third boundary (the third boundary zone + the area in the second boundary), and the area beyond the third boundary. (See Figure 2). In this way, atmospheric pollution can be controlled by the method of "control zones of multiple sources" according to the different types of polluting sources and the various regions of the polluting sources.



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CSO: 5000/4029

GROWING INDUSTRY, POPULATION COMPOUND CAPITAL'S ENVIRONMENTAL PROBLEMS

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 3, 1982, pp 2-3

[Article by Yang Jun [2799 3182], deputy director of the State Scientific and Technological Commission: "Speech (Key Points) at the Discussion Meeting on Beijing's Environmental Problems"]

[Text] The environmental problem is a major comprehensive social problem. I agree with the opinions of many comrades in Beijing City construction of the capital faces many serious problems. There are mainly four:

First, the city is too large; population increases too rapidly; factories, enterprises and business units are too concentrated within the city limits.

Second, the proportion of attention to the "bones" and "flesh" in urban construction is seriously imbalanced. There are too many deficiencies in service facilities and public facilities for urban administration, and these have presented many difficulties in people's lives.

Third, pollution is serious, and progress in afforestation has not been fast. The city's waste water seriously pollutes the water sources of rivers and lakes, soil and crops. Waste gases seriously pollute the atmosphere; noise pollution directly affects people's work and rest. Trees are felled and forests are destroyed, and sometimes grassland is also invaded and occupied.

Fourth, the management system in urban construction urgently needs to be reorganized and strengthened. The conflict between the overall layout of the city and development by each unit is becoming more and more noticeable. Indiscriminate occupation of land, unplanned building of houses, piling materials everywhere and filling ditches at will constantly occur, many places have disrupted the layout of the city and have destroyed the environment.

These four points are all environmental problems. How can these problems be solved?

First, environmental problems must be comprehensively handled. We must vigorously carry out propaganda campaigns to make more people aware that environmental problems in Beijing are very serious, and must attract sufficient attention of each department. The Central Secretariat has issued four directives concerning the building of the capital, these are very important in studying and solving Beijing's environmental problems. At the same time, the fact that the environmental problem is a strong comprehensive social problem must be publicized. Relying on only one department, one unit or one research institute cannot solve the problem. Scientific and technical problems in environmental protection also involve various aspects of basic science and applied science. We must emphatically point out that environmental problems must be solved by comprehensive treatment.

Second, science and technology should develop in coordination with the economy and society. The environmental problem is a very important social problem, its solution cannot be separated from science and technology. Science and technology can contribute to the solution of environmental problems in two ways. One is the problem of studying technical policy. Modern science and technology are no longer self-perpetuating, they have penetrated deeply into the various realms of society, and the realms of society and the economy also cannot be separated from science and technology. The trend of this penetration of science and technology into the economy and social life is very obvious. Therefore, modern science and technology cannot be limited to the study of one concrete scientific and technical problem, more importantly, we must also study what effect scientific and technical policies have upon the economy and society. This effect must be far greater than concrete achievements.

One of the environmental problems in Beijing is industry, and the other is a population of 9 million people. The population will continue to increase. Industrial problems include the policy concerning resources, the distribution of industries, industrial structure, technological structure, and product structure. Which scientific and technical policies are taken as the basis for industrial production and what technologies are used will all affect economic development, social problems and economic and social gain. The scope of scientific and technical policies is broad, to study and solve all problems at once is very difficult. The solutions must have aims and must be realistic. To solve Beijing's environmental problems, we must study and establish practical and feasible policies aimed at the actual problems in Beijing. There are many problems related to pollution produced by human activity, for example, should we use coal gas or electricity for cooking? Winter in Beijing is cold, there is the problem of heating. Some people propose centralized heating and others propose a combination of thermal and electric power. I believe electrification is attainable. The problem is concrete analysis and differentiation. The human excrement of 9 million people is also a problem that affects the environment. How this problem should be solved requires correct scientific and technical countermeasures.

Contributions which can be made in another aspect include efforts by science and technology to solve some difficult scientific and technical problems in environmental protection. We must organize special topics in science and technology to attack the problems.

Third, Beijing is a large city; it is also the capital. Its environmental problem is outstanding. Solving the environmental problem must be included in the national economic plan. According to the policies of the Central Committee, national economic plans that are drawn up should combine scientific and technological development and economic and social development, and should not be plans like those of the past. Past urban plans were mainly programs to develop industry, industrial production and capital construction, and mainly included investment in capital construction, increasing the output of industrial products, little consideration was given to economic gain and social effects. Factories also gave little consideration to ways to solve environmental pollution. Solution of environmental problems can be implemented only if Beijing draws up a three-way alliance plan according to the policies of the Central Committee. From the point of view of science and technology, a three-way alliance plan must uniformly include the questions: 1) how to popularize currently available scientific and technical achievements; 2) what major scientific and technical problems need to be studied; 3) what foreign science and technology can be introduced; and 4) technical improvement, capital construction etc. and environmental problems should be considered in combination. As regards technical improvement, the foremost task is to recognize the problems. In the past, enterprises talked about technical improvement, but mostly emphasized increasing output while technology was still outdated. I believe a very important point in technical improvement is quality, i.e., the question of the quality of productive forces. We cannot just increase the quantity produced. The quality of our productive forces is very low, in other words, consumption quota and energy consumption are high while the quality of products is low. There are few varieties and environmental pollution is serious. Therefore, unilaterally exerting efforts to produce goods in quantity will not work. When the quality of productive forces is improved, economic gains will be created. The quantity will remain the same, but energy consumption and the consumption of raw materials will drop. Products will be durable and will suit market needs, and economic gains will increase. In the decision by the State Council concerning technical improvement, the key problems that are to be solved by technical improvement are all related to the environment. One is the reduction of energy consumption and raw materials consumption. The second is changing the product structure. The third is comprehensive utilization. The fourth is environmental protection. In my opinion, should Beijing consider the environmental problem as a test element in drawing up a three-way alliance plan. The environmental problem is an outstanding social problem in Beijing, therefore, it should be included in the national economic plan of three-way alliance. This plan not only must be an annual plan, it must also be a three-way plan, a ten-year plan, and even a longer range plan. Comrade Chen Yun [7115 0061] in one of his speeches pointed out that if we have only annual plans without long-range plans, we have no plans at all. There are many environmental problems and they cannot be solved in a year nor within a short period. If we do not have long-range plans, if we stress whatever we think of, if we emphasize only the emergencies of the locality, then, it would be very difficult to solve environmental problems.

China's economy is not too developed and the level of development is not high, there are also difficulties spending a lot of money. This requires seeking truth from facts, and we have to do more work within our capabilities. Including environmental problems in national economic plans enables us to solve the problems in steps concretely and actively so that Beijing's environment will not worsen day by day but will visibly improve year after year. In this way, all the people in Beijing will be happy.

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CSO: 5000/4040

CENTRALIZED HEATING WOULD RELIEVE MUCH OF CAPITAL'S POLLUTION HEADACHES

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 6, 1981 pp 5-7

[Article by Hao Yuqi [6787 3768 3823]: "Actively Popularize Centralized Heating for Compounds To Improve the Atmospheric Environment in the Capital"]

[Text] Today, when China's energy structure is mainly built on coal, insisting on developing centralized heating is an important direction to conserve energy further, to eliminate pollution by smoke and dust and to protect the atmosphere.

While developing centralized heating, how to improve the method of scattered heating supplied by small boiler rooms at present is an important question. For over ten years, we have gradually found in our environmental protection work that the development of centralized heating for entire complexes of buildings can bring about a more thorough improvement of small boilers and the results of energy conservation and environmental protection are also more visible.

Since the founding of the People's Republic, Beijing City has built many residential buildings, government buildings, university buildings, buildings for troops and factories and warehouses as urban construction developed. Some large units such as those in the western suburbs and the northwestern suburbs have many buildings, the smaller units covering several dozen thousand square meters and the larger units covering several hundred thousand square meters, forming an independent complex of buildings. These complexes emerged gradually. Because of the limitations of the conditions at that time and historical reasons, heating was mostly provided by a boiler room with a chimney per building or one boiler room for several buildings in a scattered fashion regardless of whether the area was small or whether the buildings formed an independent complex. The supply of heat was scattered. The selection of boiler equipment was also limited to only small manually fed coal burning boilers with a low thermal efficiency and the hourly evaporation was below 2 tons. At the same time, because the chimneys of the small boiler rooms were low, the technique of operating boilers was relatively backward, when winter came, heavy smoke spread everywhere, and on foggy days, it was even more difficult for the smoke to clear. The scattered heat supply has caused serious atmospheric pollution in Beijing City. According to the results of monitoring the air from 1978 to 1980 by the Beijing City Environmental Protection and Monitoring Center: the daily average concentration of sulfur dioxide in the atmosphere during the season when heating was needed was 0.2 milligrams/cubic meters, four times the 0.05 milligrams/cubic meters during the season when heating was not needed.

In winter, under unfavorable meteorological conditions when there was no wind, when there was heavy fog, when the period of dropping temperatures was long, the concentration was 2 to 7 times higher than ordinary periods. The amount of falling dust over the city was 33.4 tons/square kilometers/month during the period when heating was needed and 23.0 tons/square kilometers/month when heating was not needed. The amount of falling dust during the season when heating was needed was 10 tons/square kilometers/month higher than that during the season when heating was not needed. If the city does not develop further and maintains the present level and if only natural growth is considered, atmospheric pollution over Beijing City will worsen. Using scattered heat supply, causes coal and dust to pile up near buildings. When strong winds blow, dust flies. This affects the appearance of the city and it is also detrimental to sanitation. Because the quality of the coal supplies cannot be guaranteed, the quality of heat supplied by the small boiler rooms is poor, indoor temperatures cannot reach the designed requirements, and the masses have complained. Scattered supply of heat by small boiler rooms also requires many boiler operators and this is not convenient to manage.

During the past ten years, some large compounds, in their effort to conserve fuel, eliminate smoke and dust and change the backward situation of scattered supply of heat, have appropriately combined some small boiler rooms and developed centralized heating, changed the scattered small boiler rooms into centralized large boiler rooms, appropriately heightened the chimneys, and installed mechanical combustion boilers with a relatively high thermal efficiency and relatively large capacity and added dust removers. These were done according to the experience of centralized heating and according to the actual situation of the offices and units, and they were done when new boilers were being installed, when old boilers were being enlarged or when equipment was being renovated. We call this kind of planned and step by step combination of small boiler rooms into large boiler rooms and gradual replacement of small boiler rooms by large boiler rooms for centralized heating of large office complexes of agencies and units centralized heating for compounds. Up to now, Beijing City already has 70 units which have popularized centralized heating for compounds. Its major advantages are:

1. It conserves fuel. Because the capacity of the boilers installed is larger and because they utilize mechanical burning, their thermal efficiency is relatively high, and they can generally conserve 10 percent to 20 percent of coal.

2. It has reduced pollution and improved the environment. For example, the 11 units of Qinghua University and the Liberation Army Logistics Academy have conserved 4,043 tons of coal each year, reducing the amount of sulphur dioxide released by 80 tons. At the same time, because dust removal equipment was installed, the amount of dust released has also been reduced. The masses at the Twentieth Academy of the Fifth Ministry of Machine Building have composed a vivid jingle to describe the waste of coal and pollution by the scattered heating system of small boiler rooms: "There are three types of large and small boilers. The chimneys of each emit black smoke. In winter, there is never enough fuel and eliminating smoke and dust cannot be done at all." After changing to centralized heating, the boilers basically do not emit anymore black smoke, and each winter, over 66 tons of smoke and dust and 3 tons of sulphur dioxide have been eliminated. Before Qinghua University changed to

centralized heating, the whole school had a total of 29 boiler rooms and 69 boilers, almost one chimney per building. On the ground, coal ash flew everywhere and the noise of the ventilator was disturbing. After changing to centralized heating, the boiler room is now far away from the buildings, and the chimneys have been heightened, greatly changing the past situation of thick smoke covering the campus of Qinghua University.

3. It has improved the quality of heat supply and improved the level of heat supply. When the Logistics Academy used scattered heating, the indoor temperature barely reached 15° to 17°C while the cost of burning fuel to generate heat created a deficit of several dozen thousand yuan. After changing to centralized heating, the indoor temperature rose to 17° to 19°C.

4. It reduced the number of managerial and operating personnel, and facilitated maintenance and management. After the Central Music Academy changed to centralized heating for compounds, the number of operating and managerial personnel was reduced by 56 percent. After the Postal and Telecommunications Academy implemented centralized heating, 8 boiler rooms were combined into two. The number of boiler operators were fixed and management was centralized. And at the same time, the technical standards of the operators were raised, favorable to the safe and economical operation of boilers.

Beijing has many favorable conditions for popularizing centralized heating for compounds. Everyone knows that the most ideal way to improve serious atmospheric pollution over Beijing is to change the present fuel structure centered around coal and to increase the proportion of oil and gas. But natural gas resources near Beijing have not been developed yet. It is obviously not possible to use artificial coal gas for burning in boilers to produce heat. The possibility of increasing the burning of oil is not great. Another method is to develop thermal power plants for centralized heating. Beijing has two thermal power plants now. In 1980, the area of heating covered 5,637,000 square meters, constituting only 8.2 percent of the number of civilian buildings near the city. Also, the target areas for supplying heat are mainly the embassy row, large public buildings and some important office buildings, while the supply to residents constitutes only 5 percent of residential houses. Viewing the present situation, the speed of developing centralized heating utilizing thermal power plants in the future will not be fast, and cannot satisfy the needs in the development of urban construction. Therefore, the problem of centralizing scattered small boilers will not be solved for quite some time. The seriousness of atmospheric pollution will not be quickly changed. Under this situation, developing centralized heating for compounds is more practical and there are many favorable conditions.

First, the units are enthusiastic. Many units have been suffering from the "hardships" of scattered heating. The boiler operators of most of the units are seasonal and temporary workers or contract workers. Some of these workers have not even seen a boiler before, let alone having mastered the techniques of operating a boiler, and they do not have any knowledge about boilers. Frequently, they come to work the first day, and fire occurs the next day. To raise the temperature quickly, they add more coal, they blow harder, and combustion is incomplete. This not only produces black smoke, it also wastes a lot of coal, causing many units to surpass their quota of coal supplies. At the same time, because the time of heating is short, some boilers only supply 4 to 5 hours of heat per shift. Some even supply heat for only 2 to 3 hours, and the indoor temperature just does not reach the normally required level. These units urgently need to change this situation and they are very enthusiastic about popularizing centralized heating for compounds.

Second, centralized heating for compounds is realized within the compound itself. It is not like joint ventures where a series of mutually interferring problems which involve decisions as to who will lead, who will invest, who will be responsible for management, whose space will be utilized for the equipment occurs. Therefore disputes can be avoided. At the same time, centralized heating is easy to set up, the period of construction is short, the effect is quick, and can produce results within the year.

Third, the scope of heating by the centralized heating for compounds can be large or small, and it can adapt to the changes in load in a versatile manner. For example, before Qinghua University had centralized heating, there was a boiler room within every 10,000 square meters, and each boiler room had an average of 2.4 boilers. Each boiler supplied heat to about 5,000 square meters. Most of the boilers were small boilers that produced less than 1 ton of evaporation per hour. For more than ten years, Qinghua University underwent expansion every year.

The original boiler rooms were limited in capability, and there was no space for expansion, thus heating became a big problem. The school combined the task of expansion with the reform of the heating system in 1972 and combined the small boiler rooms into three large boiler rooms. It installed 9 boilers and the area heated expanded from the original 270,000 square meters to 456,700 square meters. At the beginning of the 1980s, one of the boiler rooms changed from burning oil to burning coal and was rebuilt into a boiler room that could supply heat to 350,000 square meters. During the first phase of construction, 2 chain furnaces and exhaust boilers of 120,000 kilocalories/hour were installed and the heating capability was greatly increased.

Fourth, centralized heating for compounds is more economical. At first glance, it seems that the investment in developing centralized heat supply for compounds is large. But overall calculations show that capital requirement is not large and it is even more economical. For example, the Liberation Army Logistics Academy already had a heating area of 140,000 square meters prior to 1978. In 1978, it received the task of expanding the premises by more than 100,000 square meters. After completion, the area to be heated will reach 240,000 square meters. Thus, the presently available heating equipment cannot satisfy the requirements, and more boilers and more boiler rooms have to be added. At the beginning of 1980, the school combined efforts with expansion and rebuilt the original five boiler rooms for scattered heating into one boiler room for centralized heating. The total investment in construction was 877,000 yuan. Capital for development, rebuilding, reserve and retrieval was 614,000 yuan. The investment solely for centralized heating for the compound was only 263,000 yuan. In addition, because actual examples of centralized heating conserved 1,000 tons of coal each year, calculating at 45 yuan per ton of coal, each year, 45,000 yuan would be conserved. If we do not include the cost conserved because of a reduction in the number of boiler operators and management personnel and other operating costs, the investment in realizing centralized heating for compounds can be recovered in 5 to 6 years.

Although centralized heating for compounds was formed and developed under the specific conditions in Beijing, this type of heating method is suitable to the situation in China, its advantages and favorable conditions do not belong solely to compounds. It is also significant in some residential areas. If the original method of scattered heating under uniform management by administrative departments in residential areas is reformed, or if centralized heating is realized when building small new regions, this method of centralizing heating for compounds can be considered.

In future development of centralized heating for compounds, the main problem is that there is no channel for investment therefore, progress is slow. If we decide that this is the direction to develop centralized heating and it must be done, it is hoped that concerned departments can emphasize and give their support to promote it so that it can be further popularized and developed.

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NEW DIRECTIVE REQUIRES ENVIRONMENTAL IMPACT STUDIES FOR WATER CONSERVANCY PROJECTS

Beijing SHUILI SHUIDIAN JISHU [WATER CONSERVATION AND HYDROELECTRIC POWER TECHNOLOGY] in Chinese No 5, 20 May 82 pp 1-5

[Article: "Several Regulations Concerning the Evaluation of the Environmental Impact of Water Conservancy Projects (Draft) Issued by the Ministry of Water Conservancy of the People's Republic of China, February 1982"]

[Text] Important Directive Concerning Environmental Protection Work Issued by the Chinese Communist Central Secretariat (June, 1981)

We cannot stop with urban environmental protection when considering the problems of treating the "three wastes", we must consider the problem of environmental protection of nearly 10 million square kilometers of land in China. The protection of the human living environment must be included in the daily agenda now. We cannot neglect it. Treating sewage and waste gases at present is not sufficient. We should arrange efforts for the overall situation, including the area to be covered by forests, efforts to prevent the land from becoming sandy, the development and dredging of the Changjiang and Huanghe, etc.

Several Regulations Concerning the Evaluation of Environmental Impact of Water Conservancy Projects (Draft)
February, 1982

I. Preamble

According to the "Environmental Protection Law of the People's Republic of China (Trial)" and the "Rules for Managing Environmental Protection in Capital Construction Projects" jointly promulgated by the Environmental Protection Leading Group of the State Council, the State Planning Commission, the State Capital Construction Commission and the State Economic Commission, when carrying out new construction, rebuilding and expansion projects in capital construction, "the construction unit and its supervisory departments are responsible for protecting the environment. They must first present an environmental impact report on the basis of feasibility studies for the capital construction projects, and the report must be reviewed and approved by environmental protection departments before the plans for the capital construction projects are written." "If there are major changes in the scale of the capital construction project, in the main product plans, in the technology and techniques or building sites, the environmental impact report must be revised and the revised report must be submitted to the original reviewing and approving agency for approval." "The preliminary design of capital construction projects must include chapters on environmental protection to guarantee that the various measures stipulated in the environmental impact report and the opinions of the reviewers are implemented."

When the environmental impact report of a water conservancy project involves other professions, the report must follow the above regulations and it should also be made compatible with current regulations, standards and rules of the related professions.

This regulation is mainly suited for the period of studying the feasibility of the design of large and medium water conservancy projects and the period of preliminary design. This regulation can also serve as a reference during other periods of planning and designing, construction and management. In accordance with the demand for simplicity based on the actual situation, small water conservancy projects generally do not need to submit special environmental impact reports. But plans, designs and such documents should include an evaluation or explanation concerning environmental impact.

II. Purpose and Requirements

The purpose of writing an environmental impact report is to evaluate the effect that the proposed construction project will have on the environment. To rationally utilize water and soil resources, protect the environment, improve environmental quality and maintain the ecological balance, evaluation of the effects upon the environment must be conducted while planning and designing water conservancy projects so that changes that might occur in the natural and social environment after construction of the project begins can be understood. With this understanding, the best plan that is most beneficial to the national economy and that has the least unfavorable effect upon the environment can be selected from among many different plans according to technical, economic and environmental indices (or according to economic calculations and economic comparisons which include environmental investment and environmental gains) so that work can start out from the concept that all work should serve the people. Measures to reduce or eliminate and improve the plans, design, construction and management can then be proposed.

The environmental impact report should completely reflect the various types of effects this project would have upon the environment. It must fully reflect the gains, the advantages, it must seek truth from facts and reflects its side effects, the disadvantages, so that concerned departments and the state can make a policy decision.

III. Subject of the Environmental Impact Report

All large and medium water conservancy projects that produce an effect upon the natural environment, social environment and ecological balance should include an environmental impact report. After analyzing the environmental impact of this project, it is believed that there are no unfavorable effects, then a negative opinion stating that the writing of an environmental impact report is not needed can be proposed and this opinion can be reported to the concerned environmental protection departments for review and approval.

IV. The Requirements of the Environmental Impact Report During the Various Stages of Planning and Design

The evaluation of the environmental impact of a water conservancy project should involve work of corresponding depth during the various stages of planning and design. A general evaluation of the environmental impact should be carried out when comparing and selecting plans for treating river valleys during the river valley planning stage, and the preliminary ideas of the measures to reduce and eliminate unfavorable impact should be proposed. Problems of major environmental impact must be described in a special report when necessary. During the stage of feasibility studies, comprehensive evaluation of environmental impact must be carried out. Preliminary designs must include chapters on environmental protection to prove in detail the impact of the project upon the environment and to implement related measures of improvement. Technical designs should include supplementary studies of the remaining key problems. During the stage of drawing up detailed construction blueprints, the blueprints should include measures of environmental protection during the period of construction.

V. Types of Environmental Impact of Construction Projects

Construction projects can exert a favorable impact and an unfavorable impact on the environment. Analysis of the method of development, the degree of development and course of development of the impact shows that there are short and long term impact, temporary and cumulative impact, non-recurring and recurring impact, and primary and secondary impact.

Construction projects and the environment affect each other. The proposed project can affect the environment after construction begins, it becomes a part of the environment. Therefore, when studying the impact of the project on the environment, the changes in the environment created by the construction of the project must be studied at the same time the limitations and demands posed by the environment upon the design, the operation and the management of the project must also be studied.

VI. The Scope of Environmental Impact of Construction Projects

The scope of environmental impact of a project is determined by the scale of the project, the nature of the project and the geographic position of the project. The scope to be considered includes the area directly affected by the project and also a definite area of the neighborhood and nearby regions. Consideration should even include the effect upon the whole river valley, neighboring river valleys and the mouth of rivers.

The scope of environmental impact of each comparative plan and each environmental factor to be studied is different. But the determination of the scope of impact of each comparative plan must be coordinated.

VII. The Criteria of Environmental Quality Used in Evaluating Environmental Impact

The principle of evaluating the environmental impact should be to take the environmental quality level before construction of the project as the basis to compare the developmental plans at the time the project is completed or begins operation, and evaluation should be based on this. To facilitate forecasting environmental quality and to evaluate the environmental impact, the current situation of the environment should be surveyed in an overall manner and in detail.

VIII. Content of the Environmental Impact Report

The content of the report differs according to the scale of the project and the size of its impact. Generally, it should include:

(1) Construction situation;

(2) Situation of the environment before construction;

(3) The impact of the project on the environment;

(4) The unalterable and unrestorable loss of resources due to the project, for example, the loss of aquatic resources, mineral resources, the destruction of cultural relics, the destruction of habitats of wild life, changes in animal species and colonies;

(5) The various comparative plans of the project and their impact;

(6) Measures that reduce, eliminate or remedy the unfavorable impact;

(7) Substitute plans that can be proposed and that may be implemented;

(8) Technical and economic arguments and opinions on the feasibility of environmental protection proposed and estimates of investment in environmental protection measures;

(9) Questions that need to be further studied and solved;

(10) Conclusion and suggestions.

IX. The Method and Steps to Evaluate Environmental Impact

The method of evaluation: We should first carry out overall surveys, then select key problems from the data on this basis for further investigation, including surveys of the environmental background within the area affected by the project, analysis, study and evaluation of the impact. Environmental factors that are affected in a major way must be quantitatively calculated as much as possible. General impact can be qualitatively analyzed and measures, plans and designs to reduce and eliminate such impact should be proposed on this basis.

The steps of evaluation: Basically, there should be three major steps to recognize the impact, forecasting and estimating the impact. Concretely, they can be divided into the following steps:

(1) Understanding the situation of different plans for designing the project, their general direction and the scope of the impact;

(2) Studying to determine the environmental area affected by each plan;

(3) Surveying the environmental background within the area affected;

(4) Understanding the regulation and distribution of water after completion of the plans;

(5) Determining the environmental parameters to be studied;

(6) Selecting contrasting and comparative projects;

(7) Analyzing the environmental characteristics of the designed project and those of the contrasting project (such as geographic position, shape of the reservoir, regulatory characteristics, the relationship between the water access mouth and the characteristic water level, methods of controlling the reservoir, etc.);

(8) Adding partial theoretical calculations according to the environmental changes called for by the contrasting project, and forecasting the range of qualitative and quantitative changes of the already determined environmental parameters;

(9) Finding the environmental parameters that exert the major effects for key studies and analytical calculations, and proposing measures to reduce and eliminate the impact or methods of improvement;

(10) Analyzing and estimating the differences between the different plans, and selecting the plans;

(11) Writing a comprehensive evaluation (draft) of the environmental impact of the project;

(12) Further revising and supplementing the report.

Appendix (I) Reference Material

(I) Guideline for Evaluating the Environmental Impact of Water Conservancy Projects

1. Fundamental Situation

(1) Name

(2) Location: such as the address of the water conservancy project, the dam site, address of the irrigated region, water routes;

(3) Goal: to eliminate the harmful and develop the beneficial, comprehensive utilization, aim;

(4) Main engineering and technical indicators: such as the type and height of the dam, reservoir capacity, area of the reservoir, installed capacity, area of irrigation, standards for flood prevention and elimination of waterlogging, and distribution of construction work;

(5) The source and the amount of main building materials, parts, energy and water;

(6) Types of "three wastes"; amount released and method of release;

(7) Number of workers and distribution of residential and welfare areas;

(8) Area of land occupied and utilization of state land;

(9) Comparative plan: simple tabulation to describe the major engineering and technical indices of other comparative plans;

(10) Development plan: step development of upper or lower reaches or transfer of water across river valleys, and plans of rational development and utilization that uniformly plan and combine management of state land with management of ground surface water and underground water.

2. Environment before construction

(1) Geographic position of the project: including address, site of reservoir, address of irrigated area, waterways, factory housing, areas exploited for building materials, area of auxiliary enterprises, living areas and areas benefiting from the project (with plan attached).

(2) Natural environment

A. Topography, geomorphology and geology (including hydrogeology) of the surrounding area;

B. Soil

C. Hydrology, meteorology, climate;

D. Water quality (including water temperature);

E. Mineral deposits, forests, grassland, oasis, aquatic life and wild animals and plants and other natural resources of the surrounding regions.

(3) Social Environment

A. Natural protection zones, scenic areas and tourist regions, cultural relics and ruins, hot springs, convalescent regions and important political and cultural facilities in the surrounding areas;

B. Industrial and mining enterprises, transportation, agriculture, fishery and other national economic distribution, soil utilization of the surrounding areas.

C. Cities and towns and distribution of residential areas in the surrounding areas, population density, regional diseases, epidemics, diseases of natural sources;

D. Polluting sources that affect water quality: including point sources and non-point sources.

(4) Ecological System

3. Environmental Impact of Projects

(1) Environmental benefits: including the elimination of disasters and harmful situations (floods, waterlogging, drought, alkalinity, salinity, pollution, silting) and the development of the beneficial (flood prevention, irrigation, generation of electricity, navigation, aquatic production, water sports, tourism) which are projects of multiple goals and comprehensive utilization. We should emphatically point out that we must fully consider developing the beneficial function of water conservancy projects in improving water quality, coordinating ecology and optimizing the environment.

(2) Natural Environment

A. Effects upon the topography of the surrounding areas (including collapsed banks in the region of the reservoir, backward flow of water into the reservoir, changes due to silting and erosion of river channels of the upper and lower reaches), hydrology, meteorology, water quality, water temperature, geology (including hydrogeology), induced earthquakes, soil, plant colonies, animal colonies, colonies of microorganisms, aquatic life.

B. Effects upon natural resources and natural protection zones of surrounding regions (including upper and lower reaches, left and right banks, river mouths).

(3) Social Environment

A. Effects upon the surrounding regions, natural protection zones, scenic and tourist regions, cultural relics and ruins;

B. Effects of flooding the surroundings of the reservoir area and waterways, loss due to flooding and the effects on the utilization of state land and transportation.

C. Migration of population (including project site, reservoir area, irrigated area and waterways, population in the flood retention area, moving of towns and cities, urban public service enterprises, industrial and agricultural production and life).

(4) Effects upon the ecological system and health of groups of people

(5) Effects of dam rupture.

4. Measures to reduce and eliminate unfavorable effects and analysis of loss and gain

(1) In design;

(2) In construction;

(3) Operational management and other aspects;

(4) Estimates of the investment in special environmental protection measures (tabulated) including design, construction, operation, management and other aspects;

(5) Analysis of loss and gain.

5. Irreversible and unrestorable effects upon the environment caused by construction

6. Substitute plans for the project

(1) Cancelling the construction project, i.e., taking non-engineering measures;

(2) Selectively cancelling or partially cancelling sub-projects of the project.

7. Opinions on proving the technical and economic feasibility of environmental protection of the project.

8. Opinions concerning the gradual development of this project into a combined enterprise including water conservancy, agriculture and forestry, industrial and sideline production, commerce and tourism.

9. Negotiation and adjustments with related departments

(II) Content of the Environmental Impact (Chapter) of the Sanxia Water Conservancy Hub in the "Notes on the Discussion of the Report on the Design and Research of the Feasibility of the Sanxia Water Conservancy Hub" (Omitted)

(III) Content of the "Environmental Impact Report (Draft) of (Medium and Small Projects) the Navigational Project of the Clearwater River of the United States" (Omitted)

(IV) Content of the Chapter On Environmental Impact in the Selected Plan of the "Final Report on the Feasibility Study of the Itapecuru Hub (Large Project) in Brazil" (Omitted)

(V) General Regulations for the Main Text of Environmental Impact Reports Issued by the U.S. Bureau of Reclamation (Excerpt) (Omitted)

Appendix (II) Simple Definition of Terms and Explanation

(I) Environment

Environment refers to the natural environment and social environment centered around human beings. The first includes what is commonly known as the atmosphere, hydrosphere, lithosphere, and biosphere. The latter is the environment created by man, such as industry, agriculture, cities, traffic, houses, relics, places of cultural activities and scenic and tourist regions.

(II) Ecological System

The ecological system refers to the unity of colonies of living creatures and the inorganic environment.

(III) Ecological Balance

Ecological balance is a dynamic balance; it is not a static balance. The ecological system can maintain a dynamic balance mainly because its interior possesses the ability of automatic regulation. When a certain part of the system shows functional abnormalities, it may be cancelled by the regulation of different parts. The more complex the structure of the components of the system, the more varied the paths of energy flow and material recycling. The regulatory function is also stronger. Conversely, the simpler the structure of the components, the weaker the regulatory function. But no matter how strong the regulatory ability of a system, there is still a limit. Beyond this limit, the ecological balance will be destroyed. The changes in the inorganic environment on which living creatures rely for survival have a direct relationship with the ecological balance.

(IV) The "Function", "Effect" and "Impact" Commonly Used in Evaluating Environmental Impact

"Function" is human activity. In water conservancy projects, building dams, building reservoirs, repairing dykes, digging canals, building floodgates, building hydroelectric power stations all belong to this. "Effect" is the change in objective environmental conditions caused by human activity, i.e., the creation of some new processes, acceleration, slowing down, termination of some original processes. These changes are all called "effects." "Impact" is man's feeling towards and evaluation of such changes. Here, there will sometimes be an element of subjectivism, and it is influenced by human experience and the angle of viewing the problem. "Impact" should be divided into two parts. Beneficial impact is what is commonly known as technical, economic and environmental gain. Unfavorable impact is what is commonly known as side effects. Generally speaking, water conservancy projects are aimed at reforming nature, benefiting mankind, and the benefits are the main goals. But in planning, designing, construction and management, if our understanding of the environment and the ecology is not sufficient, if research is insufficient, if the situation is handled improperly, some side effects will be brought about. The responsibility of water conservancy workers should be to develop the benefits, avoid the harmful effects, prevent the unexpected, and take active measures to reduce and eliminate the unfavorable impact.

[Editor's Note]

The problem of environmental water conservancy is a new water conservancy problem related to the environment and created by the development of construction for production. It covers a broad scope; its impact is great, and it must be emphasized in the development, utilization, protection and management of water resources. It should be an important part of water conservancy work and it should be included in the agenda of daily work.

To promote the development of environmental water conservancy work, the original Ministry of Water Conservancy approved the environmental water conservancy research class to be held in Wuhan in October, 1981. Later, an Environmental Water Conservancy Research Society of the China Water Conservancy Society was founded. The class and the society drafted "Several Regulations Concerning the Evaluation of the Environmental Impact of Water Conservancy Projects (Draft)" based on the "Environmental Protection Law of the People's Republic of China (Trial)" and the "Environmental Protection Management Method for Capital Construction Projects" promulgated by the (81) Guohuanzi No 12 Notice issued jointly by the State Economic Commission, State Capital Construction Commission, State Economic Commission, and the Environmental Protection Leading Group of the State Council. The draft was reviewed by the Technical Committee of the original Water Conservancy Ministry, and it was promulgated for trial implementation by the (82) Shuihuanzi No 3 Notice issued by the original Water Conservancy Ministry.

How to write the environmental impact report for water conservancy and hydroelectric projects has been a problem of concern in the minds of the broad numbers of readers. To help solve this problem, this magazine has reprinted the related content of the "Several Regulations Concerning the Evaluation of the Environmental Impact of Water Conservancy Projects (Draft)" for the broad number of readers to apply and study.

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TASKS OF ENVIRONMENTAL WATER CONSERVANCY WORK OUTLINED

Beijing ZHONGGUO SHUILI [WATER CONSERVANCY IN CHINA] in Chinese No 2, 1982 pp 28-30

[Article by Shen Ganqing [3088 0984 0615], Vice Chairman of the Environmental and Water Conservancy Research Society: "Discussing Environmental and Water Conservancy Work"]

[Text] Today, some localities in China have a shortage of water resources. Water pollution is serious. This has attracted the attention and concern of more and more people. The problem of water resources and environmental and water conservancy work are closely related.

The environment and water conservancy we are talking about here include water conservancy problems related to the environment (for example, water pollution caused by the "three industrial wastes", blocking of river channels) and environmental problems related to water conservancy (for example, changes in the environment caused by the building of water conservancy projects). The science that studies the mutual relationship between water conservancy and the environment is called the science of environmental water conservancy. Environmental water conservancy work should be the totality of the theory and practice related to environmental water conservancy. It is the deepening and development of water conservancy work at the same time it is closely related to environmental work. Therefore, it is an important part of both water conservancy and environmental work. This work involves the survey and evaluation of water resources, their rational utilization, the balance of supply and demand, and problems of environmental ecology. The damage to human physical health and to later generations caused by water pollution is a major problem related to the quality of the population. Therefore, the problem of environmental water conservancy in fact is already involved with the three major problems of the world today: the problems related to the population, resources and the environment. We deeply believe that environmental water conservancy will be popularly noticed by people, and this new science of environmental water conservancy born out of such interest will gradually develop.

The main content of present environmental water conservancy work, in my opinion, can generally be divided into the following three parts:

(I) Protection of the water source. This is a task of water conservancy related to the environment that has been launched by the water conservancy department relatively early. It is also the work that is being carried out at present in a major way. It includes the familiar task of monitoring surveying and evaluating water quality, establishing water quality standards, water quality management (including legislation), water quality forecasting and estimation, etc. Monitoring water quality is not the only fundamental task in protecting water sources. We should monitor and test water quality on a regular or an irregular basis according to the methods and requirements related to water quality monitoring by establishing a network of stations according to the needs to protect water sources and environmental water conservancy needs. Localities which have favorable conditions and special needs can also provide water quality monitoring vehicles and boats (such as the Changqing water quality monitoring vessel of the Changjiang Water Source Protection Bureau) to conduct water quality monitoring and testing at any time. In the developmental view, we can also monitor water quality using navigational models and remote sensing. We should analyze and study water quality on the basis of monitoring and tests, provide water quality on the basis of monitoring and tests, provide water quality information accurately and in time, and serve as the eyès, ears and sentries to protect water sources. At the same time, we should accumulate information over a long period and store the information in a unified data bank for use in production and scientific research, for drawing up plans to establish a water resources system and plans for water quality management. Improvement of the representiveness, systematic nature, reliability, comparability and authority of data on water quality monitoring and testing are also problems that should be considered and studied. The purpose of water quality surveys is to understand the present situation of pollution of bodies of water and the degree of damage, to find the polluting source (including point sources and non-point sources of pollution), to provide a scientific reference for controlling pollution, protecting water sources, to rationally develop and utilize water resources, and to balance the supply and demand of water resources. The true nature of evaluating water quality is to compare water quality data and the standards for water quality and then to evaluate the data. There are many methods of evaluating water quality. Ordinarily, the results of monitoring and testing water quality and surveys are utilized to compare the contents of the various pollutants in water with the water quality standards and to describe the pollutants separately. But we must realize that water quality is a complex system. There are many indices to evluate water quality. We can use observable characteristics to describe it, we can use physical and chemical properties to describe it, and we can also use ecological status to describe it. When using the contents of pollutants in water as indices, we should not use only single indices. We should use a method of comprehensive evaluation (here, we are involved in the mathematics of ambiguity). This is a problem that is being explored domestically and abroad.

Water quality management involves social sciences and natural sciences. Its content generally includes: drawing up related laws (such as water resources laws, laws to prevent and control water pollution) and regulations; drawing up water quality management standards (environmental quality standards for water, standards for the release of water pollutants); developing water quality forecasting. We should combine water quality management planning (including water quality plans for river valleys, regions and facilities) with plans for river valleys to realize regional and river valley prevention and control of water pollution.

(ii) Evaluating the Impact of Water Conservancy Projects on the Environment. Water conservancy projects affect the environment in many aspects and each of them has a different manifestation. For example, dykes serve as a shield to prevent flood waters from overflowing, but they will also bring about some unfavorable effects. In the south, building a large number of dykes has reduced the ability of lakes to retain and store flood waters, raised the flood water level in rivers and blocked the natural migratory channels between rivers and inland lakes for fish. Some natural lowlands in North China were historically natural flood retaining regions. They also served to slow the flooding and warping when flood waters overflowed. After building the dykes, the ability to retain floods was lost, the threat of flood waters increased, and the soil in these lowlands gradually became infertile. Baiyangdian was originally a natural fresh water lake in the North China region. Many years ago, a reservoir was built on the upper reaches to block and store flood waters. Floodgates were built at the exit to regulate the flow. This made the natural lake into a man-made reservoir and changed the original hydrological conditions and the functions of regulating and storing water. It has greatly affected the water quality of Baiyangdian and even aquatic products and sideline production. After the Guanting Reservoir stored water, it raised the underground water level in the upper reaches of the reservoir, and once this caused several dozen villages and several thousand mu of land to become swamps later, many drainage projects were built. The planting system was correspondingly changed and the problem was finally solved. At the same time, because clean water was discharged, massive ruptures of the banks occurred in the flooded regions of Yongding River. Before 1978 the Xinanjiang Hydroelectric Power Station exceeded the standards for both power generation and water consumption. To realize economical operation, the task of generating electricity was greatly reduced in 1978. As a result, the amount of water discharged was too small, and around July, sea water in the Shangzhou Bay entered and industrial production and people's lives were affected.

We should point out with emphasis that the goal of building water conservancy projects is to eliminate what is harmful and develop what is favorable, to change nature, and to benefit mankind. The benefits should always be the main goals. The above side effects were brought about because we did not have a sufficient understanding of the scope of environmental ecology, we did not pay sufficient attention and we did not handle the situation properly. We should maintain a correct attitude towards such problems, we must not abandon eating because we are afraid of choking, and we must not "be scared without really being threatened." Concrete problems must be concretely analyzed. In some cases, we may "make one mistake and regret it forever", but in other cases, as long as we recognize that the situation can be remedied and saved (rebuilding the Sanmenxia Reservoir is one example). But, to solve such environmental problems, the work load is heavy. We must conduct surveys and research beforehand to prevent the unexpected. Therefore, judging and evaluating the effects of water conservancy projects upon the environment beforehand are very important. Benefits and shortcomings often coexist in things. Some side effects cannot be completely avoided. Surveys and research must be done well in proving and comparing many plans. Effective measures must be taken as remedies, or advanced methods of planning, design, construction and management must be used to reduce side effects to the most rational degree.

(III) Fundamental Work and Scientific Research in Environmental Water Conservancy. "A travel of a thousand steps begins with the first step." Sky-scrappers cannot be built on sandy beaches! A kind of "fetishism" exists at certain localities at present, i.e., a "worship" of mathematical models. Of course, we must rely on mathematical models to carry out statistical analysis. Exploration and research in environmental water conservancy, are very important. But it must be pointed out that mathematical models are equations that reflect the true system. It is the generalization of the true system. The merit and demerit of a mathematical model are not determined by whether the mathematical model itself is complex or simple and whether the mathematical method is profound or shallow. They are determined by the representativeness, reliability, comparability and authority of basic data. Without proven basic data, mathematical models are like water without a source. This is because mathematical models cannot create data that are better than actual measurements, and they cannot replace actually measured data. Therefore, we must strengthen basic work and scientific research.

Modern science, while continuing to differentiate, is forming more and more highly comprehensive sciences. The science of environmental water conservancy is one such science. It contains natural sciences and social sciences. It possesses the characteristics of covering many disciplines and spanning many sectors, and it is strongly comprehensive. Some things that will be difficult to quantize will be encountered in evaluating the environmental impact of water conservancy projects. This is a major difficulty that must be solved for environmental water conservancy science to become a precise science. The value of evaluating environmental impact is accuracy. If accuracy is lacking and if there is only a general concept, the evaluation will not be authoritative and it will not be meaningful in guiding the projects and it will not have a finding force. Therefore, we should quantize the object in evaluating environmental impact. This should rely on the achievements and methods of systems theory, information theory and ambiguous mathematics. This requires talent from many sectors, these talented people can never be provided completely by one or two sectors. Therefore, while devoting major efforts to train talent, we should also emphasize rational division of labor, cooperation and rational utilization of currently available talent so that each person can fully develop his talent.

The situation in China, including natural and social conditions, has determined the special historical role of water conservancy. The practices after liberation have proven the important function of water conservancy in China's national economy. As modernization develops, further demands will be made upon water conservancy and hydroelectric construction. Therefore, from the viewpoint of developing and utilizing water resources, there are not too many water conservancy projects, rather there are not enough. Last year, the floods and disaster in the upper reaches of the Changjiang and Huanghe and the shortage of water resources in the North China region have deepened our understanding of this problem. Modern water conservancy buildup and the general international trend have progressed from the development of single goals to the development of multiple goals and have enlarged the scope of comprehensive utilization. The scope of progress from developing step power stations on a river to the regulation of water across river valleys has become broader. The impact of human activity on the environmental ecology is becoming greater. Therefore, future water conservancy plans and designs should not be limited to the traditional spheres, but must use the overall, related, synthesized, and optimum (or optized) viewpoint of systems engineering to study and find solutions for water resource systems planning and environmental water conservancy planning to enable future water conservancy projects to be handled with still more beneficial results and more economic rationality. But viewing the management system of national water resources at present, "each governing his own" still exists, and this is unfavorable to unified management, unified planning, unified development and rational utilization of water resources and the realization of an optimally balanced supply and demand. Therefore, it is suggested that during this time of reforming the national agencies, a national unified water resources management agency should be established to facilitate the work of building modernization.

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HEAVY METAL ORGANIC POLLUTION OF THE XIANGJIANG STUDIED

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[Article by Wang Shida [3769 1102 6671], Liu Baoyuan [0491 0202 0337], Yang Tong [2799 3392] of the Marine Biology Institute of the Chinese Academy of Sciences: "Aquatic Life and Pollution of Water Quality in Xiangjiang*"]

[Text] Xiangjiang which is 856 kilometers long originates in Lingui County in Guangxi. It flows through the Guilin area and enters Hunan province, then it passes through the important industrial cities of Hengyang, Zhuzhou, Xiangtan, Changsha and pours into Dongtinghu at the mouth of the Xiangyinghao River.

Along the way, industrial waste water from mining, metallurgy, and the chemical industry enters Xiangjiang and the widespread use of farm chemicals along the Xiangjiang river valley has caused the content of 666 and DDT in the water and at the bottom of the river to continually increase. Xiangjiang has been polluted. Parts of the river have been heavily polluted, directly affecting the colony structure of aquatic life. At the same time, damage to fishery resources have occurred.

In recent years, our nation has emphasized the utilization of living organisms as a monitor for water pollution. Aquatic life in normal bodies of water and the surrounding environment form a natural ecological system. After a body of water has been polluted, the first to be affected is aquatic life. The multiplicity of species in the colony of aquatic life visibly drops, and various changes occur. Toxic materials concentrate in the body via breathing and the food chain. This can also reflect the nature and degree of pollution. Therefore, the relationship between aquatic life and pollution of water quality are closely related. Biological monitoring has been regarded as an important part of water quality monitoring. It can reflect the combined trend in the environment during recent stages, and it can make up for the deficiencies in chemical monitoring methods.

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*Epiphytes were taken from the research report by Comrades Luo Senyuan [5012 2773 3293] and Zeng Shengliang [2582 3932 0357] of the Hunan Environmental Protection Institute.

Aquatic Life Zones

As a river, we still do not have systematic research data on the aquatic life zones of Xiangjiang. Accordingly, this article obviously cannot reflect the entire situation of aquatic life in Xiangjiang, but we will briefly give a general view of the composition and characteristics of the major aquatic species in Xiangjiang from three aspects (algae, benthos, fish) based on the results of surveys of pollution of the river over the past few years and other related reference information.

The Effect of Pollution Upon Aquatic Life

According to surveys of polluting sources of Xiangjiang and the data compiled from many years of chemical monitoring, Xiangjiang is mainly polluted by cadmium, zinc, lead, copper and other heavy metals. Parts of the river are also polluted in varying degrees by mercury and arsenic. The content of heavy metals measured in the river segment in Xiawangang in Zhuzhou is abnormally high. Organic pollution mainly occurs in the river segments in the middle and lower reaches.

After a body of water is polluted, the varieties and number of life forms change. This means, the colony structure of aquatic life is affected. This change can be reflected by using simple mathematical statistics. The continuous comparative indices by Cairns are mainly used for algae. This method does not have to determine the species. It saves time, it is easy to apply because it is expressed by the ratios of group numbers and individual numbers [2]. The multiplicity index of Shannon is used to monitor benthos. It reflects the relationship between the number of species in a colony and the number of individuals. It includes a large amount of information about the colony structure [3]. Therefore, it is a method of surveying and evaluating pollution, and it is very useful in discovering and measuring the effects of toxic substances.

Because most of the polluting sources are distributed on the right bank of Xiangjiang, the concentration of pollutants in the river is high on the right and low on the left. This distribution affects the colony structure of algae and benthos. The difference in the degree of pollution has created visible differences between the composition of species on the right bank and near the left bank. The cross section of the river itself forms a contrast.

The species of algae in the Xingan river segment of the upper reaches of Xiangjiang are many but the number is not high. The continuous comparative index value of Cairns is relatively high at 0.77 (Table 1). The achnanthes minutissima is the dominant species. It is a species that grows in large numbers in water with a high oxygen content (Archibald, 1972) [4]. It has a relatively low tolerance to pollution by heavy metals (Resch, 1972) [5]. There are 50 species of benthal invertebrates. Most of them are sensitive species, such as the Planaria species which cannot tolerate any organic pollution that can be felt (Haukes, 1979) [6]. Among these are 9 species of ephemerida, 5 species of trichoptera, all floating type aerobic species. The multiplicity index value is the highest at 3.98 (Table 2). This shows that the river segment at Xingan is a clean body of water. The colony structure of aquatic life is in the natural ecological system.

Table 1. Epiphytes in Xiangjiang and Their Cairns Continuous Comparative Indices

	Xingan	Lingling	Hengyang	Zhuzhou			Xiangtan				Changsha			Xiangying	
	Xiarenzhang	Laotutou	Songbo	Fengxi	Xiawanggang		Gonghugiao		Yijiawan		Wuyigiao		Sanchaji	Zhangshugang	
	Right	Right	Right	Left	Left	Right	Left	Right	Left	Right	Left	Right	Left	Left	Right
Species	the most	more	Inter-mediate	more	Inter-mediate	the least	less	less	Inter-mediate	Inter-mediate	Inter-mediate	Inter-mediate	Inter-mediate	Inter-mediate	Inter-mediate
Number Intermediate/mm	1260	578	770		1190	43	4153	5504	4823	316	6373	2607	630	5520	7429
Index value	0.77	0.70	0.57	0.68	0.67	not cal-cu-lated	0.66	0.61	0.56	0.67	0.61	0.58	0.58	0.56	0.38

July and October 1980

Table 2. Benthos in Xiangjiang and Their Shannon Multiplicity Indices

	Xingan		Lingling		Hengyang				Zhuzhou				Xiangtan				Changsha				Xiangying	
	Xianren-zhang		Laofutou		Songbo		Heijiang-tuo		Fengxi		Xiawangang		Gong-lugiano		Xijiawan		Wuyigiao		Sanchaji		Zhang-shugang	
	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Species	42	44	36	26	11	10	33	13	17	19	6	0	22	5	21	20	12	27	25	12	13	9
Number Individual/ basket	775	782	966	333	62	47	418	63	294	129	7	0	745	129	128	496	59	144	233	184	246	26
Index Values	3.95	3.98	2.71	3.00	2.97	2.72	3.07	3.08	2.78	3.21	0.73	0	2.11	0.78	2.24	2.65	2.55	2.90	2.84	2.37	2.11	2.27

In the river segment at Songbo, it has been proven that greater damage has been caused by the release of waste water (some of the waste water have been treated) into Xiangjiang by the lead, zinc, arsenic smelting plants and the Shuikoushan lead and zinc mines and the Bofang Copper Mines. The species of aquatic life have visibly reduced. The two index values contrasted with their values in the upper reaches are low. The gomphonema parvulum, the cymbella affinis and the baetis naiad that is more tolerant to pollution are all dominant species. This river segment is typical of pollution by heavy metals. After the river flows through Hengyang City, it again takes in the waste water from the factories, and sewage water from urban living is drained directly into the river. Accompanying pollution by heavy metals is organic pollution. Aquatic oligoghaeta appear on the left bank of Hejiangtao slightly downstream, such as the Limnodrilus hoffmeisteri and the rhyacodrilus sinicus. Peloscolex species have a greater resistance to heavy metals and they are adept at adopting to various types of organic pollution including pollution by farm chemicals. The species of chironomus larvae have also increased.

Xiawangang in Zhuzhou collects waste water from the Zhuzhou Metallurgical Plant and worsens the pollution of Xiangjiang. Larvae of trichoptera and ephemerida naiad have disappeared. Because the bottom mud of the right bank is seriously polluted, benthos was not collected. The multiplicity index was 0 (Table 2). There were very few algae, only nitzchia species, gomphonema sphaeophorum, and gomphonema parvulum. On the right bank, each square meter was populated by only 43 organisms. The continuous comparative index was difficult to calculate (Table 1).

The two surveyed river segments at Gongluqiao and Wuyiqiao in Xiangtan also gathered the waste water from the various factories in Xiangtan and Changsha and this has worsened pollution of the water. In the section at Gongluqiao in Xiangtan, 5 species of benthos occurred on the right bank and 22 occurred on the left bank. The multiplicity index value was 0.78 to 2.11 (Table 2). The sampling point on the right bank of the section of Xiangjiang Bridge was located below the outlet of polluted water from Changsha City. The number of aquatic oligoghaeta among the benthos was greater, such as the limnodrilus hoffmeisteri, the rhyacodrilus sinicus, and nais species, constituting 53 percent. Organic pollution was more serious (Hawkes, 1980) [6].

The effect of pollution of Xiangjiang upon fish is also very visible. As the amount of industrial waste water drained into the river increases, the production of fish declines in a fluctuating manner year after year. For example, the yield in the 1950s was 200,000 dan. By the 1970s, it was only 80,000 dan, a reduction of 60 percent. At the same time, certain famous fish of Xiangjiang, such as myxocyprinus asiaticus, coreius heterodon also reduced greatly. Hilsa herring that migrates up Xiangjiang from the ocean to spawn has almost become extinct. In the composition of fish catch in the past, large economic fish was plentiful. Now there are more small undomesticated and hybrid fish and there are very few old adult fish.

This damage to fishery is more visibly manifested at certain localized segments of the river. The spawning ground of domesticated fish in the river segment from Zhanghekou in Changning County to Xianglushan in Hengnan mentioned above has gradually shrank in scale and number because of pollution, and the propagation of replenishing colonies has been affected. The industrial waste water released by these factories and mines contain cadmium, lead, zinc, copper, mercury and sulfides, cyanides, phenol and many types of toxic substances, greatly surpassing the allowable concentrations stipulated in water quality standards for fishery. The spawning colonies have been blocked outside of the spawning ground. Even if they enter the spawning ground, they would immediately avoid the area because they cannot adapt. This has been manifested by a reduction in the yield of fish fry. According to data of the Hunan Provincial Fish Resources Survey Office, in the 1970s, the average catch of fry was 214 million, a reduction of 85 percent from the 1960s, and a drop of 92 percent from the 1950s.

The effects of pollution on aquatic life cited above were all based on examples in key polluted river segments. Because the annual runoff of Xiangjiang is large, and has its own biological purification ability, the water in the upper reaches of Xiangjiang is clean, the water of most of the river segments in the middle and lower reaches of the river is slightly or medium polluted according to calculations by the biological index method. Because there are more industrial cities in the middle and lower reaches, and because a lot of farm chemicals are used in the farmland along the river valley, the threat to aquatic life and aquatic resources in Xiangjiang brought about by pollution cannot be neglected.

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EXTENT OF HEAVY METALS POLLUTION OF PEARL RIVER EXPLORED

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[Article by Wang Zhaoding of the South China Sea Institute of Oceanology, Academia Sinica: "The Estimation of Dissolved Zn(II), Cd(II), Pb(II) and Cu(II) in the Zhujiang River Estuary"]

[Text] In the past few years, there has been some interest in the nature of the dissolved species of various elements. The research works may be classified into two types: (1) direct determinations after separations; (2) theoretical calculations starting from chemical equilibrium.[3] In the first case, there are technical limitations in the separation and determination procedures; so far, it has only been possible to have rough classifications of the elements into inorganic (or organic) unstable species, combined species, etc. [4,6] Thus much work has been done to determine the dissolved species of various elements theoretically starting from chemical equilibrium. However, these calculations are based on thermodynamic equilibrium and are limited by the availabilities of data on equilibrium constants, activity coefficients, etc. So far, these calculations have provided only an approximate picture.

There are many procedures to determine the dissolved species of trace elements.[11] At present, the commonly-used methods are the Sillen and Garrels-Thompson procedures.[1] Zirino and Yamamoto (1972)[15] have used the G-T procedure and the activity coefficients from the formula of Davis. They have calculated the concentrations of the dissolved species of divalent Zn, Cd, Pb and Cu in sea water with S=35 percent and their variations with pH in the range of 7.0 to 9.0. However, their model has two defects: (1) the model did not consider the formation of compounds on mixing; this is the main reason for the crudeness of their model;[15] (2) for ionic concentration greater than 0.1 M, the formula of Davis may be inadequate for calculating the single activity coefficient for all metal ions and complex ions.[11] Dyrssen and Wedborg (1974)[5] have also studied the dissolved species of Zr, Cd, Pb, Cu, Hg in sea water theoretically. They have used glycine as a typical organic complexing agent. However, they have neglected the complexing between the amine groups. For OH^- concentrations in sea water, $Cu(OH)_2^0$ should be the principal dissolved species for Cu and Zn.[15] Recently, Long and Angino (1977)[11] have calculated the amounts of dissolved species of Zn, Cd, Pb, Cu for two model systems, i.e., fresh water-sea water and fresh water-salt water mixtures at various ratios. Their method is similar to Zirino. They have claculated the distributions of various species for pH=3.5 to 11.5 region. However, they have not given the relationships with S‰. At present, several model calculations have shown that the dissolved species distributions are dependent on the ionic concentration or the concentrations of individual ions.[11] For estuary waters, (mixtures of fresh water and sea water), there is not much variation in pH, and there are no linear variations. On the contrary, there are distinct variations in S‰ due to the dilution effects. Thus it is more meanginful to discuss the dissolved species of various elements as a function of S‰ for estuary waters.

We have carried out preliminary experiments on the dissolved species of Zn, Cd, Pb, Cu for the estuaries of the Pearl [Zhujiang] River.[1] In this paper, we have used the G-T ion combination model to calculate the distributions of the dissolved species of Zn, Cd, Pb, Cu (divalent) in the Pearl River estuary. It is necessary to compare our theoretical results with future field data in order to confirm the validity of our calculations.

I. Model for the Calculation of the Distribution of Species

Estuaries are complex environments where river water and sea water are mixed together. It is necessary to use suitable simplifications for the estimate of the dissolved species of trace elements. Because of the lack of data on organic complexing agents in the Pearl River estuary, we have approximated the body of water mixtures in the estuary as an inorganic-complexing system. The system is also assumed to be in thermodynamic equilibrium. Because of the limitations of insufficient amounts of thermodynamic data, we have usually considered the formations of complexes of the type ML_n (n=1,2,3,4) and also mixed complexes $ML_iL'_j$ (i+j=2,3,4). Because the concentrations of these four elements are less than 10 ppm in sea water, we may neglect the formations of multinuclear complexes.[11,15] All calculations are for river water-sea water mixtures at 25°C and 1 atm.

II. Method of Calculations

The pH and S‰ of the system will change when the river water and sea water mix. During the mixing in the Pearl River estuary, pH=6.93-7.84[1]; the variation is not linear.[2] Due to the effects of dilution, there are conspicuous stepwise variations in S‰ as indicated in Table 1.

Table 1

Station	Water Temp (°C)	pH	Cl(‰) measured	S(‰) measured	Alk(m) measured	I^* (m) calculated
1	24.0	7.68	0.00695	0.0302	0.27×10^{-3}	5.829×10^{-4}
2	25.0	7.84	0.6693	1.242	1.23×10^{-3}	0.02394
3	25.5	7.72	1.368	2.518	1.28×10^{-3}	0.04860
4	25.4	7.47	3.829	6.979	1.11×10^{-3}	0.1347
5	23.8	7.77	6.874	12.452	1.44×10^{-3}	0.2403
6	22.5	6.93	10.746	19.647	1.74×10^{-3}	0.3792
7	24.0	7.57	14.499	26.092	2.19×10^{-3}	0.5036

*Calculated according to the formula I = 0.0193 S. (25°C, 1 atm.)[2]

Hence we may regard the distributions of various species as functions of S‰. Thus the calculations of the distributions of dissolved species in estuary waters may be divided into two steps:

(A) From the G-T model for the formation of complexes of ions,[7] the equations given in reference 15 and in Table 3 may be used to calculate the concentrations of the common anions (mainly Cl^-, SO_4^{2-}, HCO_3^- and CO_3^{2-}) in the ionized state as functions of S‰ for mixed waters.

(B) From the G-T model, the following equations may be used to calculate the distributions of the species of trace elements. From the mass balance, for a fixed amount of trace metal M, we have:

(1) Total metal concentration:

$$\begin{aligned}[M]_T &= [M] + \sum[ML_n] \\ &= [M]\left\{1 + \sum\beta_n[L]^n \frac{\gamma_M \cdot \gamma_L^n}{\gamma_{ML_n}}\right\}\end{aligned}$$

(2) Percentage of uncombined metal ions:

$$\begin{aligned}\%[M] &= 100[M]/[M]_T \\ &= 100\bigg/\left\{1 + \sum\beta_n[L]^n \frac{\gamma_M \cdot \gamma_L^n}{\gamma_{ML_n}}\right\}\end{aligned}$$

(3) Percentage of ML_n complexes:

$$\begin{aligned}\%[ML_n] &= 100[ML_n]/[M]_T \\ &= \sum\beta_n[L]^n \frac{\gamma_M \cdot \gamma_L^n}{\gamma_{ML_n}}\bigg/\left\{1 + \sum\beta_n[L]^n \frac{\gamma_M \cdot \gamma_L^n}{\gamma_{ML_n}}\right\}\end{aligned}$$

where $[M[_T$ is the total metal concentration, $[M]$ is the gram-molar concentration of uncombined (free) metal ions, $[ML_n]$ is the complex concentration (including both single complexes and mixed complexes $[ML_iL'_j]$, $i+j=2,3,4$), n $(=1,2,3,4)$ is the degree of complexing, β_n is the equilibrium constant for the n-th complex of a particular ion, γ_M is the activity coefficient of the metal ion, γ_L is the activity coefficient of the ligand (complexing agent), and γ_{ML_n} is the activity coefficient of the complex.

III. Data Used for the Model

In our calculations, we have used the values given by Zirino and Yamamoto (1972)[15] for our coefficients.

1. Activity coefficient (γ_i)

Precise determinations of activity coefficients of ions and their complexes in natural sea water are lacking, both experimentally and theoretically. Usually, approximate methods of calculations are used.[11]

Recently, Whitfield[13,14] has pointed out that models of ion-complexing are inconsistent with the MacInner rule for activity coefficients. Furthermore, the David modification of the Debye-Huckel theory is also inconsistent with the MacInner rule. Whitfield suggested that the Pitzer formula may be used to calculate the activity coefficients of common and trace ions in sea water. However, the application of the Pitzer formula is limited by the availability of relevant data.

Thus, we have used the equation of Helgeson to evaluate the single activity coefficient for common and trace ions in this paper.[11] The equation of Helgeson is as follows:

$$\log \gamma_i = -\left(\frac{A Z_i^2 I^{1/2}}{1 + \mathring{a} B I^{1/2}} + B' I\right)$$

The notation follows equation (41) of reference 8. At 25°C, $A=0.5095$, $B=0.3284$, $B'=0.041$, and values of $\mathring{a}$ is taken from Table 1 of Kielland.[10] The equation of Helgeson has been used to calculate the single activity coefficient of common and trace ions and their complexes for the ionic concentrations at the seven measuring stations. The results are given in Table 2.

Table 2. The single activity coefficients for common and trace ions and their complexes (γ_i)

I	5.829×10^{-4}	0.02397	0.04860	0.1347	0.2403	0.3792	0.5036
$\gamma_{Mg^{2+}}$	0.8989	0.5953	0.5169	0.4108	0.3577	0.3200	0.2982
$\gamma_{Ca^{2+}}$	0.8975	0.5718	0.4838	0.3634	0.3033	0.2615	0.2379
$\gamma_{Na^{+}}$	0.9729	0.8596	0.8173	0.7434	0.6959	0.6556	0.6291
$\gamma_{K^{+}}$	0.9727	0.8523	0.8049	0.7198	0.6632	0.6433	0.5842
$\gamma_{SO_4^{2-}}$	0.8960	0.5455	0.4462	0.3089	0.2412	0.1953	0.1701
$\gamma_{CO_3^{2-}}$	0.8963	0.5524	0.4562	0.3233	0.2575	0.2125	0.1877
$\gamma_{Cl^{-}}$	0.9727	0.8523	0.8049	0.7198	0.6632	0.6154	0.5842
$\gamma_{HCO_3^{-}}$	0.9729	0.8596	0.8173	0.7434	0.6959	0.6556	0.6291
$\gamma_{Br^{-}}$	0.9727	0.8523	0.8049	0.7198	0.6632	0.6154	0.5842
$\gamma_{Zn^{2+}}$	0.8975	0.5718	0.4838	0.3634	0.3033	0.2615	0.2379
$\gamma_{Cd^{2+}}$	0.8968	0.5590	0.4657	0.3371	0.2733	0.2293	0.2049
$\gamma_{Pb^{2+}}$	0.8963	0.5524	0.4562	0.3233	0.2575	0.2125	0.1877
$\gamma_{Cu^{2+}}$	0.8975	0.5718	0.4838	0.3634	0.3033	0.2615	0.2379
$^{*}\gamma_{I}$	0.9729	0.8597	0.8175	0.7440	0.6964	0.6562	0.6299
γ_{II}	0.8962	0.5502	0.4527	0.3183	0.2518	0.2065	0.1815
γ_{0}	0.9999	0.9978	0.9909	0.9874	0.9775	0.9648	0.9536

2. Concentration (m)

All ion concentrations are given in gram-moles by weight. The common ion concentrations at the seven measuring stations are given in Table 3.

Table 3. Common ion concentrations at the seven measuring stations (m)

S(‰)	0.0302	1.242	2.518	6.979	12.452	19.647	26.092
Na^{+}	1.18×10^{-4}	0.0137	0.0312	0,095	0.163	0.257	0.341
K^{+}	1.31×10^{-6}	4.50×10^{-4}	9.03×10^{-4}	2.40×10^{-3}	4.14×10^{-3}	6.01×10^{-3}	7.34×10^{-3}
Mg^{2+}	4.24×10^{-5}	1.79×10^{-3}	3.68×10^{-3}	0.0104	0.0186	0.0295	0.0395
Ca^{2+}	7.58×10^{-5}	4.64×10^{-4}	7.86×10^{-4}	2.09×10^{-3}	3.69×10^{-3}	5.79×10^{-3}	7.66×10^{-3}
Cl^{-}	1.96×10^{-4}	0.0189	0.0386	0.108	0.194	0.303	0.409
SO_4^{2-}	2.64×10^{-5}	1.03×10^{-3}	2.08×10^{-3}	5.67×10^{-3}	0.0100	0.0157	0.0210
HCO_3^{-}	2.20×10^{-4}	1.25×10^{-3}	1.30×10^{-3}	1.12×10^{-3}	1.40×10^{-3}	1.59×10^{-3}	2.11×10^{-3}
CO_3^{2-}	6.95×10^{-7}	1.01×10^{-5}	1.05×10^{-5}	8.68×10^{-4}	3.22×10^{-5}	7.52×10^{-4}	5.73×10^{-5}
Br^{-}	3.78×10^{-8}	2.33×10^{-5}	5.04×10^{-5}	1.49×10^{-4}	2.90×10^{-4}	4.67×10^{-4}	6.13×10^{-4}

3. Equilibrium constant (β_n)

Thermodynamic constants have been used to calculate the equilibrium constants of the complexes. At present, the direct and precise determinations of equilibrium constants in natural sea water are still very difficult. We are forced to use the equilibrium constants at zero ion concentrations and then revise these values for our equilibrium calculations. These values are taken from references 11, 12 and 15 and are tabulated in Table 4.

Table 4. Equilibrium constants of the complexes for calculating the trace element species ($\log\beta_{11}$)[11,12,15]

配位体' / $\log\beta_n$	Cl^-	OH^-	$(OH)Cl^{2-}$	HCO_3^-	CO_3^{2-}	SO_4^{2-}	Br^-
Zn: $\log\beta_{11}$	0.4	4.4	5.8	2.1	5.3	2.3	0.2
$\log\beta_{11}$	0.61	12.89					
$\log\beta_{13}$	0.53	14.0					
$\log\beta_{14}$	0.2	15.0					
Cd: $\log\beta_{11}$	2.0	5.0	6.1	2.1	5.4	2.3	2.0
$\log\beta_{11}$	2.7	10.6				3.5	
$\log\beta_{13}$	2.1	10.0					
$\log\beta_{14}$		10.0					
Pb: $\log\beta_{11}$	1.6	6.2	6.2	2.9	7.5	2.7	1.6
$\log\beta_{11}$	1.78	10.9				3.47	
$\log\beta_{13}$	1.68	13.9					
$\log\beta_{14}$	1.38	16.3					
Cu: $\log\beta_{11}$	0.02*	6.3	7.9	2.7	6.77	2.3	0.7
$\log\beta_{11}$	−0.7	14.3			10.0		
$\log\beta_{13}$	−2.2	15.0					
$\log\beta_{14}$	−4.4	16.0					

*Taken from Long (1977).
'ligand

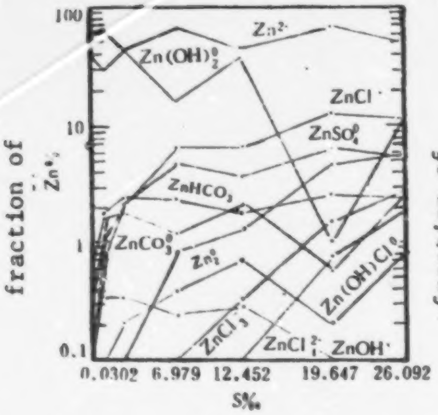
IV. Results and Discussions

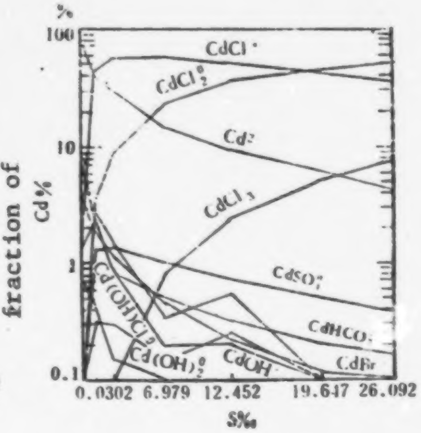
1. The results of our calculations are shown in Fig. 1-4 for the dissolved species of divalent Zn, Cd, Pb and Cu. From Fig. 1-4, it may be seen that for the Pearl River estuary (S% = 0.0302 to 26.092, pH=6.93 to 7.84), the main dissolved species of these four heavy metals are:

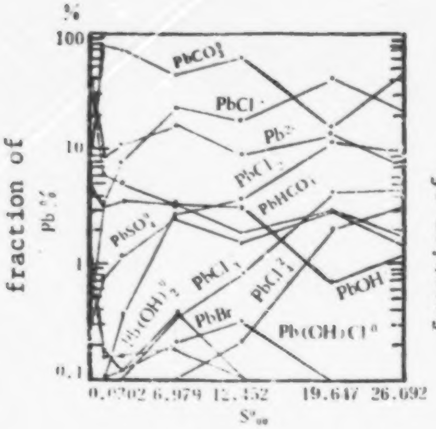
$$\text{Zn: } Zn^{2+},\ Zn(OH)_2^0,\ ZnCl^+;\quad \text{Cd: } CdCl^+,\ CdCl_2^0,\ Cd^{2+};$$

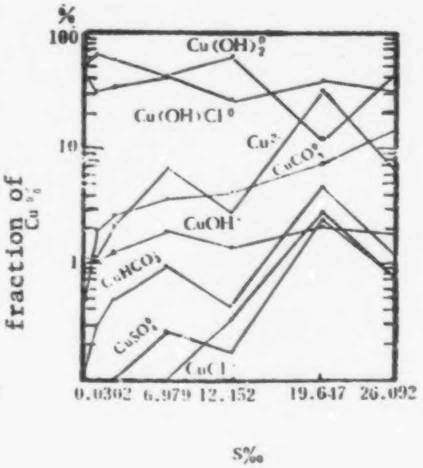
$$\text{Pb: } PbCO_3^0,\ PbCl^+,\ Pb^{2+};\quad \text{Cu: } Cu(OH)_2^0,\ Cu(OH)Cl,\ Cu^{2+}。$$

Our results are quite similar to the model calculations of Long (1977). However, the species of $Cu(OH)Cl^0$ is absent from the results of Long since he has not considered the mixed complexes in his model.[11] From Fig. 4, it may be seen that $Cu(OH)Cl^0$ is quite prominent and is certainly present in significant quantities.









2. Zn: In the mixed water system of the Pearl River estuary, the characteristics of the Zn species is the prominence of free Zn^{2+}. With the increase in S‰, the percentage of $ZnCl^+$ gradually goes up while $Zn(OH)_2{}^o$ decreases. The changes are rather drastic in regions where S‰ is less than 5. On the other hand, the percentages of $ZnHCO_3{}^+$ remain low without too much variations. These results indicate that the species of Zn are mainly influenced by the amounts of sea water in the Pearl River estuary.

3. Cd: From Fig. 2, it may be seen that the Cd species are mainly the chlorides. With the increase in S‰, the species of $CdCl^+$ and $CdCl_2{}^o$ become more prominent. In the regions S‰ = 0.0302 to 5.000, there are rapid decrease

in Cd^{2+} and rapid increases in $CdCl^+$ and $CdCl_2^o$. Near the river (S% = 19.000 to 26.000), $CdCl_2^o$ predominated over $CdCl^+$. Thus the species of Cd are mainly influenced by the chloride ion concentration and not by the Ph. On comparing Figs. 1 to 4, it may be seen that the effects if chloride ions are ligands (complexing agents) are stronger for Cd than the other three elements.

4. Pb: From Fig. 3, it may be seen that the distributions of Pb are quite characteristic in the Pearl River estuary, $PbCO_3^o$ being predominant. The influence of pH is not large. However, with the variations in S‰, the percentages of Pb^{2+} and $Pb(OH)^+$ decrease while the percentages of $PbCO_3^o$ and $PbCl^+$ increase. Near the river, there are competitive effects between CO_3^{2-} and Cl^-.

5. Cu: As may be seen from Fig. 4, the results are quite different from Cd. In the Pearl River estuary, the complexing of Cl^- with Cu decreases and varies with S‰, whereas there is less change in the percentage of $Cu(OH)Cl^o$. On the contrary, the effects of OH^- and CO_3^{2-} ligands are quite prominent and are influenced by pH.

In summary, the distributions of the dissolved species of the four elements in the Pearl River estuary are mainly influenced by S‰ whereas the effect of pH is rather small. This indicates that when the river water and sea water mix in the Pearl River estuary, the fraction of sea water is the main factor.

At present, there are certain disagreements about this type of theoretical calculation. In addition to the proper selection of equilibrium constants for complexing and the proper calculation of activity coefficients (in particular, the activity coefficients of the neutral compounds formed by complexing), etc., it has been recently suggested that proper models must consider the compound formations between the cloride ions and the anions[9]. This is quite different from many chemical models (such as G-T model, etc.) in the past. Further research may be necessary for these questions. In this paper, we have simply used certain measured values and the G-T model to estimate the distributions of the dissolved species of trace elements in the estuary waters. The validity of these calculations is limited. The results are only approximations under certain conditions. However, these results may be useful for research on biological systems, geologies and environmental protections in estuary waters.

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9899
CSO: 5000/4042

HEAVY POLLUTION SERIOUSLY AFFECTS GUANGZHOU'S WATER SOURCES, ENVIRONMENT

Guangzhou GUANGZHOU RIBAO in Chinese 24 Apr 82 p 1

[Article by Wu Guoxun [6762 0948 3872] and Zhang Huizhong [1728 1920 1813]: "A Group of Advanced Collectives and Individuals in Environmental Protection Receive Praise; Present Environmental Pollution Is Still Very Serious, Control Work Must Continue"]

[Text] On 23 April, the people's government of the city held the Guangzhou Municipal Environmental Protection Awards Meeting to praise and award 112 advanced collectives and 127 activists.

Last year, our city combined efforts with industrial readjustment and technical improvement to actively launch treatment of the "three wastes", and carried out 239 pollution treatment projects with an investment of more than 21 million yuan. The efforts have served an active function in improving and protecting Guangzhou's environment and in conserving energy. Last year, 66 treatment projects were completed and became operational, and 70 industrial boilers that emitted black smoke and caused serious pollution were rebuilt. Many units controlled and solved pollution problems through comprehensive utilization. For example, the Guangzhou Battery Plant gradually eliminated pollution caused by lead powder and dust and lead steam in nearby areas through technological improvement. Each year, the plant can also recover 90 tons of lead dust. Since last year, concerned departments have paid more attention to solving the actual problems in environmental protection. They included environmental protection work in plans to develop production and technical improvement, and gradually opened up channels to collect funds for treatment. Last year, our city arranged a total of 239 projects of treatment with an investment of 21.42 million yuan, equivalent to the sum of investments over the previous 7 years.

Yet Guangzhou's environmental pollution at present is still very serious. Yesterday's meeting pointed out that the release of the "three wastes" in our city is still large, and the rate of treatment is still very low. Progress in treatment is still far behind that in such cities as Shanghai and Tianjin. Industrial enterprises have released large amounts of harmful substances because of the serious waste of energy sources. These substances have seriously affected our city's water sources and environment, and they have directly and indirectly affected the health of city residents. The meeting asked each concerned department and unit to conscientiously plan present environmental protection projects well, plan prevention and control of pollution well, plan prevention and control of pollution well, unify the development of production with urban construction and the protection of the environment, continue to complete the improvement of industrial boilers and treatment of sewage from hospitals, mobilize the masses to be self reliant and carry out environmental protection further.

9296
CSO: 5000/4039

RESEARCHERS SEEK ENVIRONMENTAL CAUSES FOR NATION'S HIGH INCIDENCE OF LIVER CANCER

Beijing HUANGJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 2, 1982 pp 3-6

[Article by Fang Rukang [2455 1172 1660]: "Environment and Cancer of the Liver"]

[Text] China is a nation with a relatively high death rate due to cancer of the liver. According to data on the death rates due to cancer of the liver in some nations provided by Japanese scholar Mitsuo Susuki, the death rate among male victims of cancer of the liver in China is by international standards 19.6, ranking first among 30 nations, and the death rate among female victims is 7.9, ranking fourth.

Cancer of the liver has been called "the king of cancers" or "the bastion of cancer". This is because cancer of the liver grows inside the largest and essential organ of the human body--the liver. It begins unnoticed but develops quickly and the death rate is high.

There are two types of cancer of the liver. One is called metastatic cancer of the liver. It is caused by the metastasis of cancer cells from other parts of the body to the liver. The other type is called primary cancer of the liver (i.e., what is generally called cancer of the liver). It originates and grows inside the liver. Under the microscope, primary cancer of the liver can be again divided into three types: One originates from a liver cell, called the liver cell cancer, which constitutes 90 percent of all cases of cancer of the liver in China. The second originates from the bile duct in the liver and is called bile duct cell cancer. The third is a mixture of the two.

Chance Discovery

At the beginning of 1970, a hospital in Shanghai City registered patients suffering from cancer of the liver. By chance, it was discovered that most of these patients of cancer of the liver came from Qidong County in Jiangsu Province. This attracted the attention of concerned departments. To find the cause, to prevent and control cancer of the liver, and to overcome this so-called "bastion of cancer", a "Qidong tumor science research team" was established. Scientific research personnel conducted surveys of the local people and discovered that the total death rate of the residents of the county dropped from 8.62 percent in 1958 to 5.87 percent in 1976, while the death rate due to malignant tumors rose from 56.69/100,000 to 127.07/100,000. The death rate due to cancer of the liver rose from 20.45/100,000 to 47.71/100,000. After 1968, the death rate due to cancer of the liver basically fluctuated between 45-50/100,000. Such a high death rate due to cancer of the liver is not often seen in the world.

What attracted people's attention was that the occurrence of cancer of the liver in Qidong County was not evenly distributed but characterized by obvious regional differences. The whole county has 6 prefectures and 40 communes (not including the fishery communes). From 1958 to 1971, the annual average death rate due to cancer of the liver in the four communes in the northern part of Lusi Prefecture was lower at 10-17/100,000, while the death rate due to cancer of the liver in the Jianghai Prefecture in the southeastern part was higher. Of the 8 communes in the whole prefecture, except Dafeng Commune, the death rate in the other communes surpassed 40/100,000. The death rates at Donghai and Hehe communes were 52.8/100,000 and 51.1/100,000 respectively. The death rate at Dongyuan Commune in the Haidong Prefecture in the eastern part was even higher, reaching 53.0/100,000, ranking first throughout the county.

Even more puzzling was that the number of persons who died of cancer of the liver in Xining Commune and Tongxing Commune separated only by a river was very different. In Xining Commune north of Daoanhe, there were only 20 deaths due to cancer of the liver from 1958 to 1974, but in Tongxing Commune south of Daoanhe, the number reached 169 persons.

The occurrence of these phenomena could not be easily understood from traditional bacteriological, virological or parasitological explanations. Therefore, people proposed environmental and other factors. In this way, geological and environmental science workers who had always been regarded as unrelated to medical science were absorbed into this scientific research team and began comprehensive surveys and studies that combined microcosmic and macrocosmic viewpoints.

Examination of the Sites

During the course of comprehensive surveys, geologists discovered that although the two communes of Xing and Tonxing are separated only by one river, the environments are very different. The land at Xining Commune in the north was formed 2,000 years ago. The saline and alkaline contents in the soil are relatively low. The topography is relatively high and cool, generally more than 5 meters above sea level, and the water system is relatively regular. Water flow is smooth and the water quality is better. The land of Donqxing Commune in the south was formed within the last 100 to 200 years. The saline and alkaline contents in the soil are relatively heavy. The topography is relatively low, generally less than 5 meters above sea level. In particular, the water system is complex. There is a lot of stagnant water and the water quality is poor. Residents drink a lot of water from residential ditches and covered ditches surrounding their houses. poor water quality and pollution of drinking water are very commonplace in Qidong County.

In order to broader the field of view, open up new ideas, conduct comparison, a "comprehensive cancer of the liver inspection team of three provinces and one city" was established in 1975. It went to the sites to inspect, collect information, and separate regions in China with epidemics of cancer of the liver into four categories/according to survey data on deaths due to cancer of the liver in 16 provinces, cities and autonomous regions: low epidemic areas of < 10/100,000, including 9 provinces and cities; medium epidemic areas of 10-19/100,000, including 6 provinces and cities; high epidemic area of 20-29/100,000; and severe epidemic area of > 30/100,000. The results showed that the regions and counties with an average death rate due to cancer of the liver in China are mainly concentrated to the coastal regions of Jiangsu, Shanghai, Zhejiang, Fujian, and Guangdong. In Guangxi, the counties of Fusui and Wuming form a central region with a high death rate.

The higher death rates were 51.69/100,000 in Qidong County in Jiangsu and 55.58/100,000 in Fusui County in Guangxi. Some communes (such as Changping Commune with a death rate of 77/100,000) and some brigades (such as the Mumin Brigade of Changping Commune with a death rate of over 100/100,000) had even higher death rates. The death rate due to cancer of the liver in the Foshan Prefecture in the Pearl River Delta in Guangdong was also high. For example, the death rates were 23.85/100,000 at Jiangmen, 23.64/100,000 at Shunde, and 21.72/100,000 at Foshan.

Many counties and cities with a high incidence of cancer of the liver were also discovered in other coastal river deltas, such as Tongan at the mouth of Jiulongjiang with a death rate of 42.10/100,000, Xiamen with a death rate of 27.05/100,000, and Quanzhou City on Jinjiang with a death rate of 28.06/100,000. In addition, the death rates due to cancer of the liver of some islands were also relatively high, such as Dongshan Island in Fujian which had a death rate reaching 46.0/100,000, Pingtan Island with a death rate of 29.29/100,000, Nanao Island in Guangdong with a death rate of 27.84/100,000, Zongming Island in Shanghai with a death rate of 37.42/100,000, and Changhai Island in Liaoning with a death rate of 17.15/100,000.

In conclusion, the characteristics of the geographic distribution of cancer of the liver in China are: a higher death rate in the south than in the north, a higher rate in the east than in the west, and a higher rate in the coastal region of Donghai than the inland regions. Cancer of the liver is more prevalent in warm regions, damp regions, regions with more rain, lowlands river deltas and coastal regions and islands.

Exploring the Cause of the Disease

In the past, some people believed that cancer of the liver in China was related to liver-rot from eating "raw fish" (raw fish meat). But this cannot explain the occurrence of cancer of the liver in regions where people do not eat raw fish in China and in the world. Also, liver-rot generally causes only bile duct cell cancer, thus, it does not explain the cause of 90 percent of all liver cell cancer cases. Some people believe cancer of the liver may be related to blood flukes, but people have discovered that the epidemic regions of these two diseases do not coincide. There are still others who believe that cancer of the liver is related to alcoholism. According to statistics, habitual drinkers constitute about 40 percent of patients of cancer of the liver. But this does not easily explain why there are less cases of cancer of the liver among Europeans and Americans with more alcoholics. In the past, a lot of emphasis was placed on malnutrition. But some regions with a high percentage of occurrence show that the nutritional conditions of patients of cancer of the liver and those who are not patients of cancer of the liver are not visibly different.

In recent years, many people have concentrated on studying the "viral causes and chemical causes" of cancer of the liver. But when people used the electron microscope to inspect liver cancer cells, most of them did not observe viroid grains. More importantly is that the "theory of viral hepatitis" still cannot explain why there are many people suffering from hepatitis but only a few among them suffer from cancer of the liver.

The relationship between hardening of the liver and cancer of the liver has been closely studied for a long time. About 70 percent of the patients of cancer of the liver also suffer from hardening of the liver at the same time, and patients suffering from hardening of the liver who also have cancer of the liver visibly outnumber those without hardening of the liver. Whether these two are related by chance or by cause and effect (i.e., cancer of the liver caused by hardening of the liver, or hardening of the liver caused by cancer of the liver), or whether both are different results of an unknown factor, we do not yet know. In conclusion, the cause of cancer of the liver is still unknown.

The Proposal of Environmental Problems

The proposal of environmental causes of cancer originated first from the regional difference in the distribution of cancer.

Compared to other cancer diseases, the regional difference in the distribution of cancer of the liver is more obvious. It is mainly distributed among the Equator and in the warm temperate zone; it is less common in the cold temperate zone and the frigid zone.

The death rate due to primary cancer of the liver in the world is highest in Asia and Africa. The rate of occurrence is the highest in regions with higher temperatures and higher humidity, and such climatic conditions provide conditions for the growth of molds. In recent years, many types of molds have been separated out from grains of regions with a high incidence of cancer of the liver, especially the toxin of flavacol flavobacterium. In some regions with a high incidence of cancer of the liver, it was found that such a high incidence was related to the fact that local residents consume certain moldy grains more (especially corn and peanuts). It has already been proven that the toxin of flavacol is the strongest toxin currently known to induce cancer of the liver in animals.

The theory of cancer epidemic due to immigration is more convincing in proving the environmental causes of the disease. The incidence of cancer of the liver among whites and blacks in North America is low but the incidence of cancer of the liver among African blacks is at least 3 to 7 times higher than that among American blacks. Almost all cases of cancer of the liver in Singapore occur in residents of Chinese ancestry born in China while the incidence in their offspring visibly drops. The incidence of cancer of the liver in American citizens of Chinese ancestry born in China (first generation) is 11.34 times higher than that among American males and 3.11 times higher than females. The incidence among American citizens of Chinese ancestry is lower than that of the Chinese population. The incidence of cancer of the liver among American citizens of Chinese ancestry born in America is 3 1/3 lower than that of American citizens born in China (first generation). The incidence of occurrence of cancer of the liver among the more than 2 million Chinese mainland immigrants born in Hong Kong is 0.5/100,000, while the incidence of cancer of the liver among the more than 1.4 million immigrants born in Guangdong is 12/100,000. Immigrants usually marry within their own race, therefore such change in the incidence, instead of attributing it to hereditary factors, it would be better to attribute it to the changes in environmental factors and living habits.

Recently, some scholars in China believe pollution of water may be a cause of cancer of the liver and they point out that there is a "unique relationship between drinking water and cancer of the liver". They investigated Rudong, Haimen and Qidong Counties in Jiangsu and discovered that in the regions with a high incidence of cancer of the liver, the residents mainly drink polluted water from residential ditches or covered ditches, followed by river water (mostly stagnant water), and a few drink well water. This situation was also observed in Zongming and Nanhui counties in Shanghai City where the incidence of cancer of the liver was high.

In addition, a lot of valuable research material has also been proposed in the relationship between cancer of the liver and the differences between the amounts of nitrous acid salts and trace elements in the environment. But, because the occurrence of cancer of the liver has a relatively long period of incubation, a definite conclusion still requires a relatively long period of study. Yet, the close relationship between the environment and cancer is publicly accepted today. Not long ago, the World Health Organization estimated that environmental causes may constitute 60 to 90 percent of all causes of human cancer.

Preventing the Unexpected

Some people believe that before the cause of the disease has been understood clearly, cancer of the liver cannot be prevented. Yet, in fact, if we can implement some effective measures based on those suspected clues already proposed, prevention is possible and necessary, doing so is needed to guard against the disease among the masses, and it is a good way to see if the ideas are correct.

Today, some regions with a high incidence of cancer of the liver have already taken measures to "control water, inspect grains, prevent hepatitis" or "prevent molds", "detoxify and prevent pollution." The comprehensive examination of cancer of the liver showed that the incidence of the disease among residents drinking polluted water in ponds, in residential ditches or covered ditches is high while the incidence of the disease among residents drinking well water is low. Therefore, it is proposed that drinking well water, protecting water sources and improving the sanitation of drinking water are very important.

Food grains are the most important materials for the broad number of people. Managing food grains well, preventing molds, eliminating toxins are also important measures to prevent hepatitis. Warehoused food grains must be dried under the sun and dried in the shade, weeds and loose soil must be removed. Granaries should be built at high and cool places where there is a breeze and where it is dry. The ground surface should be level to prevent dampness. After food grains are dried and warehoused they must be frequently inspected. When absorption of moisture and dampness occur, they must be turned and dried in time. In transporting or processing food grains, pollution by molds should be prevented. Household food grain containers should also be disinfected to prevent insects and dampness.

Sanitation should be emphasized in preventing hepatitis. Viral hepatitis should be prevented and controlled and attention should be paid to disinfection and quarantine. Blood donors should be examined for antigens related to hepatitis. Patients who have had hepatitis and hardening of the liver must be examined at fixed intervals and attention must be paid to follow-up visits. In addition, some localities must change the custom of eating "raw fish" and heavy drinking.

9296
CSO: 5000/4029

POLLUTION OF THE FOOD CHAIN DISCUSSED

Tianjin WEISHENG KEPU BAO in Chinese 10 Jan 82 p 1

[Article by Zheng Shuyi [1728 2579 5030] of the Investigation and Research Office of the Tianjin City Environmental Protection Bureau: "Miscellany on Pollution of the Food Chain"]

[Text] Chinese people have a saying: "Diseases enter through the mouth." This mainly refers to sickness due to eating unclean foods which have spoiled and become moldy.

In this apsect, the lessons are painful and profound. In the early 1950s, shocking "regional diseases" occurred in Japan--mercury poisoning from eating fish, and osteodynia. At that time, these deadly diseases puzzled many medical experts and they were helpless. Several years later, people learned: mercury poisoning from eating fish is the result of mercuric pollutants that entered the bodies of fish via water and subsequently the human body after eating the fish. Osteodynia resulted from a long period of eating "cadmium polluted rice" after cadmium pollutants entered the water and soil and were absorbed by the rice plants. These are typical cases of pollutants endangering health through the "food chain." They warn us that agricultural sideline products and aquatic products are important links in the pollution of the food chain and we should not be careless.

What course does pollution of agricultural sideline products follow? The following are worth noting: pollution of bodies of water, pollution of soil, irrigation using polluted water, raising fish and aquatic life with polluted water, and pollution by residual farm chemicals. Here, the general situation can be seen in some localized regional cases of pollution of food grains, vegetables, melons and fruits, eggs and fish.

The lower reaches of the Su Canal were once polluted by industrial waste water containing mercury. Investigation discovered that some fish contain as much as 1.6993 milligram/kilogram of mercury in their bodies, over 5 times the allowable level for consumption. The content of mercury in rice grains of a certain region along the canal reached a high of 0.168 milligram/kilogram. Mercury was even found in some grapes. In regions irrigated by polluted water for long periods, the highest content of mercury in some rice grains was found to be 0.257 milligram/kilogram, and some wheat also contained as much as 0.176 milligram/kilogram of cadmium. Some vegetables contained as much as 0.75 milligram/kilogram of lead. In the bodies of fish raised in polluted water regions, the average content of chromiun in some was 0.95 milligram/kilogram. Massive use of organic chlorine farm chemicals had left residues in certain food grains, meats and eggs. Some corn contains a high content of 1.03 milligram/kilogram of 666. Some sorghum contains as much as 0.100 milligram/-kilogram of DDT. Some pork contains as much as 4.44 milligram/kilogram of 666, and some chicken eggs contain as much as 4.27 milligram/kilogram of DDT.

Although the above data are the measured results of individual samples, and some of the residual substances should also be present in definite amounts in the human body, but the problem is to prevent accumulation over the normally needed amounts and to prevent them from causing sickness. For this, the measures that should be taken are: first, to treat the "three wastes" of industry, stop pollution in water regions, soil and agricultural sideline products; second, to carry out foodstuff inspection of agricultural sideline products, take preventive measures; third, avoid eating agricultural sideline products from certain polluted regions over long periods, appropriately adjust the composition of the diet, etc. In general, for people's health, we must prevent "diseases from entering through the mouth," and pay attention to the problem of pollution of the food chain.

9296
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COMPREHENSIVE REGIONAL PLANNING PROPOSED TO IMPROVE URBAN ECOSYSTEMS

Guangzhou HUANJING [ENVIRONMENT] in Chinese No 3, 1 Mar 82

[Article by Zhang Shuzhong (1728 2885 0022), Deputy Chief, Office of Environmental Protection, State Planning Council]

[Text] When people think of ecology, they cite forests, rivers, lakes and meadows as examples, without any mention of cities. Actually, the ecosystem of the city is a special and complex one centered around people and is established by its various interrelationships with other bio-organisms and non-living matter. Not only is this system controlled by the natural environment, it is also strongly affected by the social environment.

Mass population growth and concentration are characteristics of the urban ecosystem, expressed as a disturbed balance in plant growth, a scarcity of wildlife, and a suppression of microbiological activity. On the other hand, pollution of natural environment, which is characteristic of the non-living system, is caused by concentration of dirty contaminants in the cities, the result of massive energy use in various human activities. This has diminished the regulatory capacity of the natural environment, resulting in a lowered environmental quality.

In the natural ecosystem, energy and matter can sustain the survival needs of living organisms in the system, but in the urban ecosystem, large infusions of matter and energy from other ecosystems by manmade means are needed. At the same time, large amounts of waste matter resulting from the production and daily living activities of the urban population cannot be degraded within the system and requires channeling into other ecosystems. For this reason, the circulation of matter and energy in an urban environment describes an expanding type of ecosystem.

In the urban ecosystem, urbanization continues to affect man, and man undergoes an ecologic transformation in this self-domestication process. At the same time, rapid urbanization also created environmental changes that affect the health of the population. According to 1975 statistics for the city of Shanghai, the mortality rate from lung cancer was higher for the city than for the suburbs. Analysis of lung cancer mortality data from statistics for Peking from 1974 to 1978 also showed higher rates for industrial over urban areas, and urban over closer suburban areas, and close suburbs over outlying suburbs.

Air pollution is an unusual feature characteristic of the urban environment, and benzo(a)pyrene in the urban atmosphere is known to be highly carcinogenic. Together with its increased concentration in the atmosphere, the incidence and mortality rates of lung cancer also show a corresponding increase.

Today, with accelerated industrial development and continued population growth, urbanization has reached new heights. Because the city has to find needed resources, it has intensified this stripping of the natural resources and disrupted the natural ecological balance. For this reason, in order to survive, man must not surround himself with hazards from various waste materials he had created in the first place. Instead, he must take positive steps to regulate this relationship between himself and his living environment, particularly to control and protect the balance of the urban ecosystem, for it to evolve in a direction suited to his existence and development.

As the city is the socioeconomic center of a nation or a region, its rational development and overall layout are the foundation of good urban planning. At the same time, the city is an essential part of any national conservation program. With respect to national conservation, China is quite concerned about urban planning and construction and has given the urban ecologic system legal protection. Article Seven of the Environmental Protection Act of the Chinese People's Republic (provisional) states: "To plan and build the ideal modern city, all new restoration and construction in the city must be based on climatic, geographic, hydrographic and ecologic conditions. To prevent pollution and other public hazards, all industrial, residential and public facilities, together with green zones, must be evaluated for their environmental impact, their overall planning and their rational location."

What is considered the ideal city? Its basic requirements must at least consider man's existence. They must allow him to breathe fresh air and to drink clean water in his living environment, and to work and rest in peaceful surroundings. To attain such a planned and orderly environment where the skies are blue, the water is pure, the air is fresh. the surroundings are quiet, and the noise is minimal, steps must be taken. From an ecological standpoint, does achieving this mean that basic requirements for building a first class modern city have been met?

What then, is to be done about those already polluted cities? In the urban environment, man has always been in charge. In addition to his administrative and management skills, the favored position of man in this ecosystem must be expressed in such a way that he can take an active role to balance the various relationships within the ecosystem with self-awareness, and to protect the natural resources and the environments regenerative capacity, for cities to become "homes" where people can live and work in peace.

However, cities (particularly large ones) do not have adequate resources to regulate themselves. For this reason, controlling the urban ecosystems balance must be carried out in a broader regional context, which means a regional view must be taken.

In its development, the progression of human society leads to changes in the natural environment, and urbanization cannot be avoided. Under conditions of acute population growth, the ecologic balance within urban limits cannot be assured. So, to maintain the urban ecologic balance, what measures are needed that will allow the city to become an ideal urban model?

To resolve the complex problems of environmental pollution, most approaches abroad adopt a comprehensive regional plan for the environment, to protect it and allow reasonable use of its resources. To evaluate socioeconomic benefits, an economic perspective must be taken in promulgating such environmental protection measures. Therefore, to protect the urban ecosystem and to improve the quality of this environment, an urban environmental plan must first be designed. The goal, from the perspective of regional ecologic balance, is to make full use of natural conditions. Therefore, logical planning and utilization of urban manpower and land and natural resources to establish a link between the urban ecosystem and other ecosystems within the region are called for. This way, the urban ecosystem can evolve in a direction compatible with man's existence and development. Some examples of such planning are determination of the relationship between urban characteristics and environmental quality requirements; establishing the relationship between controlled urban population growth and environmental capacity; finding the link between orderly production and utilization of natural resources; purposeful planning and conduct of production based on ecologic requirements; regulation of all relationships within the ecosystem through economic, administrative and legal measures that fully support reducing pollution and cleaning the environment by natural means; and use of comprehensive regional measures etc., for a systematic overall study of environmental quality.

The urban ecosystem is an unusual one that straddles both the natural and social environments in good part. For this reason, when technical plans and measures are being considered for controlling and regulating various relationships within the urban ecosystem, they must proceed from these two perspectives. This is a basic principle and technique to be followed in studying the urban ecosystem.

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ACADEMY OF SCIENCES MARSHALS FORCES TO STUDY BEIJING ECOSYSTEM

Beijing GUANGMING RIBAO in Chinese 1 Feb 82 p 1

[Article by Ke Huan [2688 3883]: "Building a Clean and Beautiful Capital, The Chinese Academy of Sciences Develops Ecosystems Research in Beijing City"]

[Text] To implement the four directives for construction of the City of Beijing issued by the Secretariat of the Central Committee to build Beijing into the cleanest and the most beautiful first class city, the Environmental Sciences Committee of the Chinese Academy of Sciences has organized the forces of many disciplines and has cooperated with concerned units of Beijing City to develop ecosystems research.

This research project will first comprehensively analyze the natural conditions, population movements, urban construction, land utilization, economic development and environmental quality in Beijing City on the foundation of summarizing the massive amount of past work and will draw up ecological, socio-economic and environmental zones for the whole city. The second step will be aimed at presently existing problems of energy in Beijing City's ecosystem and material flow. It will thoroughly study the city's energy, hydraulic resources, vegetables, garbage, trees, green areas and the need for water surfaces and possible conflicts to find scientific countermeasures for rational adjustment and control. Finally, the best design and model for urban construction that takes care of economic and population developments and that also assures a good environment will be produced by combining all factors and by utilizing the methods of systems analysis. This will provide an ecological reference for realizing the directives of the Central Committee.

This research project will be carried out in stages and headed by famous ecologists Ma Shijun [7456 0013 7486] and Hou Xueyu [0186 1331 3558] who are members of the Academic Department with the participation of the Geography Institute, Plant Institute, Environmental Chemistry Institute, Zoology Institute subordinate to the Chinese Academy of Sciences and the Ecology Center.

9296
CSO: 5000/4021

BEIJING EXHIBIT HIGHLIGHTS DESTRUCTION OF NATION'S ECOLOGICAL SYSTEMS

Beijing GUANGMING RIBAO in Chinese 21 May 82 p 2

[Text] According to our reporter, Jin Tao, the "China Protection of Nature Exhibition" geared to the theme: "Beware! Don't destroy your own homeland" which opened to the public at the beginning of April has aroused sharp public reaction. Many scientific workers and viewers admitted that they were so shocked by the destruction of the natural ecological system of certain localities in China that they believe immediate protection measures are called for because many rare animals and plants are on the verge of extinction.

In addition to a vivid presentation on the basics of ecology, the "China Protection of Nature Exhibition" also uses many charts, specimens, televisions and slides to illustrate the ecological systems of the forests, grasslands, lakes, rivers and coastal lines in China, and how they are being destroyed by irrational exploitation and utilization. Here the viewers may see for themselves the disastrous water loss and erosion, floods and avalanches along the upper and mid-reaches of the Changjiang caused by uncontrolled felling of trees; the drying up of the grass sea in Guizhou due to encroaching reclamation from all sides; the grasslands once known for "cattle and sheep roaming in windswept grass" which, due to excessive grazing and reclamation, are now degenerating and are plagued by recurrent visitations by rats; and the drying up of fishery resources following the disruption of the oceanic ecological system. This part of the exhibition is based on scientific evidence to educate the public on the importance of the protection of nature and the serious consequences brought on by the destruction of the natural ecological equilibrium. Viewing the destruction of nature in the fatherland, many viewers felt deeply grieved. A pupil from the Kangleli Elementary School, Beijing, wrote in the visitors' book: "Please arrange to run more exhibitions like this to teach us to love and protect nature when we are little." A student from the 9th Middle School, Beijing, points out: "I hope the exhibition will lead to some enforcible measures. It would be best to publicize throughout China the spirit and the content of the exhibition to enable more people to understand the importance of protecting natural resources. I hope all leading comrades concerned will pay close attention to the exhibition."

Many famous scientists think it is very immportant to run an exhibition like this to make the people of China feel concerned about the protection of nature. Yang Hanxi, a famous ecologist and vice-chairman of the Chinese National

Committee on "Man and the World of Living Things," points out: "It is not enough to have the scientists feel concerned about the protection of nature. Even more important is to make the masses feel concerned because that is the key to the effective protection of nature." He believes the most meaningful work is to make the young people learn to love animals, plants, and nature to enable them to develop a profound love for the world of nature to which they are closely related. Ma Shijun, member of the Chinese Academy of Sciences and chairman of the board of directors of the Chinese Ecological Society, said: "If mankind wants to utilize natural resources continually and preserve a quality of environment fit for human life and work, they must understand nature and observe nature's laws." He believes that China must pay close attention to the establishment of nature protection zones, only then can we maintain the dynamic natural equilibrium required by the world of nature; protect endangered animals and plants, including microorganisms; preserve biological resources (gene banks), an important source for man to improve the existing breeds of living things; and provide important bases for the study of natural sciences, especially ecology.

After viewing the exhibition, many biologists said that protecting nature is protecting mankind. Failure to protect nature would lead to the drying up of natural resources. Zhang Jie and Wang Song, technicians of the Institute of Zoology of the Chinese Academy of Sciences, cited many instances to show that the destruction of ecological balance is much more serious than what the exhibition presented, even within nature protection zones, the killing and hunting of rare animals continues, this can not be tolerated. Wang Xianbo of the Botany Institute of the Chinese Academy of Sciences believes that "the most basic matter under existing circumstances is the promotion of education on environment, and that all possible vehicles should be used to popularize the knowledge on protecting nature to enable everyone to understand and love nature and become so concerned about the destruction of nature that they will become more rational in utilizing nature."

The exhibition is held under the auspices of the Environmental Protection Office of the State Council, the Chinese Zoology Society, the Chinese Natural Science Museum Society and the Beijing Nature Museum.

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BETTER DISTRIBUTION OF INDUSTRY, STRONGER MANAGEMENT WOULD EASE GROWING POLLUTION PROBLEM

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 6, 1981 pp 2-5

[Article by Qu Geping [2575 2706 1627]: "Control of Industrial Pollution--Part Six, Major International Environmental Problems"]

[Excerpt] Control of Industrial Pollution in China

Environmental pollution in China today comes mainly from industrial production. This type of pollution not only causes serious damage to cities, it also spreads to the rivers and the agricultural environment. We frequently hear this kind of argument: We cannot "walk the old road of creating pollution first and then clean up" as the capitalist nations have done. This is correct. But, how can we not walk the old road? There are no practical measures. Therefore, this old road is difficult to avoid. According to statistics of the ten provinces and cities of Beijing, Shanghai, Heilongjiang, Hebei, Henan, Anhui, Fujian, Liaoning, Sichuan and Shaanxi, a total of 37.3 million tons of industrial waste water and sewage was released each day in 1979, an increase of 7 percent over 1978 and an increase of 21 percent over 1977. The amount of waste gases released each day amounted to 6.3 billion cubic meters, an increase of 5 percent over 1978 and an increase of 17 percent over 1977. Each year, the amount of waste dregs released amounted to 310 million tons, an increase of 3 percent over 1978 and an increase of 10 percent over 1977. Therefore, controlling industrial pollution is an urgent problem facing us.

Domestic and foreign experiences prove that it is completely possible to control industrial pollution within an appropriate environmental standard. This requires the establishment of corresponding policy and management measures. At present, the following three measures are being implemented:

First, rational distribution of industry. Newly built industries, including urban roadside industries and commune and brigade industries in farm villages, should all be rationally distributed under unified planning. They should never again be allowed to be established anywhere without regard to environmental demands. Old enterprises that are irrationally distributed should be combined, converted to producing something else and treated. Those that seriously pollute should stop production or be moved. After a period of readjustment, these efforts will make the distribution of industry more rational.

Second, actively carry out technical improvements and use low polluting or non-polluting new technologies as much as possible to replace obsolete equipment and technologies and techniques which have a high energy consumption, produce a lot of waste and seriously pollute. This is the major means to realize our nation's industrial modernization, and it is also an important measure to control pollution. Using new technology and controlling industrial pollution should be the important technical policy of our nation.

Third, strengthen environmental management of enterprises: Pollution control and production must be closely combined. Measures should be taken in such aspects as establishing quotas for the consumption of raw materials, maintenance and renovation of equipment, scientific research, comprehensive utilization and purification. We must establish an inspection system for pollution control. We must combine pollution control and the economic benefits of the enterprises. Controlling industrial pollution is possible only when industrial and mining enterprises conscientiously carry out such measures.

Fourth, establish appropriate standards for release of pollutants by industries and strictly supervise their implementation. Those who release more than the allowable amounts must be economically limited or sanctioned.

9296
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IMPROVED TREATMENT METHODS PROVIDE MORE WATER FOR XI'AN'S INDUSTRY, AGRICULTURE

Xi'an SHAANXI RIBAO in Chinese 13 Apr 82 p 2

[Article by reporter Wang Hao [3769 8504]: "Xian City Uses Natural Purification and Artificial Treatment Methods To Utilize Sewage Rationally and Ease the Competition for Water Between Industry and Agriculture"]

[Text] Xi'an City combined natural purification and artificial treatment to rationally utilize sewage from industrial production and living to irrigate farmland. Good results have been realized in increasing the production of food grains and cotton and in easing the conflict between industry and agriculture in the use of water.

Because Xi'an City has continued to expand, the population has increased drastically. For many years, the supply of water for industry and living could not meet the demands. Water for agricultural production in the suburbs could not be guaranteed. Frequently, industry and agriculture competed for water. On the other hand, a lot of sewage was released within the city and in the suburbs every day. This polluted the environment and affected ecological balance. How to solve these two problems became a major problem that affected the development of the whole city's industrial and agricultural production and the people's life. Sewage contained nitrogen, phosphorus and potassium and other chemical elements. They can fertilize the fields and increase output, but sewage also contains a definite amount of harmful substances. If these are properly controlled, urban pollution can be reduced, water sources can be conserved and the treated water can be used to irrigate the farmland and increase the yield of food grains and cotton. Therefore, the city decided to proceed from actual conditions, combine indigenous and foreign methds and work along both lines to regard sewage as a resource to utilize rationally to benefit the people. Besides rebuilding the existing polluted water treatment plant, expanding its capabilities from treating 60,000 tons of sewage a day to 120,000 tons, and changing primary sedimentation to secondary biochemical treatment, the main efforts relied on the Banhuiqu Administration Bureau. Four purification reservoirs were connected, in the northwestern suburbs. Each reservoir served to settle harmful substances contained in the sewage. Purification by the reservoirs was combined with a set of scientific management methods to use sewage for irrigation within the irrigated area under the jurisdiction of the Banhuiqu Administrative Bureau. The methods prevented pollution and developed benefits. They involved drawing clean water, polluted water and underground water during ordinary times and mixing the water for irrigation. Before the crops matured, irrigation with polluted water was stopped and only clean water was used for irrigation to prevent harmful elements from accumulating in the grains. Small border irrigation and furrow irrigation were carried out. Irrigation alternated between 30 and 70 percent or 20 and 80 percent so that the crops benefited evenly. The city's sewage treatment plant, the sewage irrigation experiment station and the agricultural environmental protection monitoring station also strengthened monitoring work and provided data and information on harmful elements in time. They cooperated closely and strengthencd control to do the work of rational utilization of sewage to irrigate farmland.

Xi'an City has realized visible results in utilizing sewage to irrigate farmland. The suburban area drew sewage to irrigate farmland using the method of purification by reservoirs and artificial treatment. Large scale increases in output were common. Per mu yield of food grains increased from 400 jin to 1,100 jin. In one year, more than 4,000 yuan in net income were earned for the state. The per mu yield of the cotton fields also increased from 40 jin to 100 jin. The utilization of sewage to irrigate the fields conserved chemical fertilizes, labor, animal force, machinery, electricity and transportation. The cost of production per year per one hundred mu of land dropped 60 yuan. Utilization of sewage to irrigate the fields prevented sewage from flowing into the Wei River, Sanmenxia and the Huanghe area and from causing pollution and also eased the conflict between industry and agriculture to compete for water in Xi'an City.

To further prevent environmental pollution and rationally utilize sewage to irrigate farmland, promote development in production and protect the people's physical health, the environmental protection department of Xi'an City urged the Hydroelectricity Bureau and the Banhuiqu Administrative Bureau to select topics in applying mud as fertilizers, preventing pollution by heavy metals and to mobilize technical forces to study these topics. Under the unified leadership of the provincial environmental protection bureau, universities and colleges and scientific research departments in the Xi'an area were organized to conduct an overall evaluation of the environmental quality of the area irrigated by sewage in Xi'an. They also surveyed underground water in the shallow soil layers and the conditons of vegetables and fish, took active preventive and control measures, and established a whole management system to prevent and control environmental pollution.

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SILVER COMPANY ACHIEVES GOOD RESULTS IN CONTROLLING WASTE WATER

Lanzhou GANSU RIBAO in Chinese 2 Apr 82 p 4

[Article by Xu Yang [1776 2254]: "Silver Company Treats Waste Water With Outstanding Results"]

[Text] The treatment of industrial waste water and polluted water from production at the Silver and Nonferrous Metals Company is an important scientific and technical project of environmental protection. Up to now, the amount of waste and polluted water released by the company itself has dropped from the more than 50,000 tons of the past to over 10,000 tons. The amount of harmful waste water dropped from over 20,000 tons in the past to 7,000 to 8,000 tons. Of the 19 sources of harmful waste water at the company, 17 have already been preliminarily treated. The retrieval and utilization rate of water has increased from 62 percent in 1979 to 74 percent.

In the past, this company followed the crooked road of first building and then treating. Thus, pollution by water, gases, slag and dust was very serious. In recent years, the company's leadership emphasized the treatment of waste and polluted water as a major task. They delved deeply into the actual situation, surveyed and studied, insisted on carrying out the effective measure of "separating the flow of clean and polluted water, classifying polluted water, treating pollutants comprehensively, taking retrieval and utilization and scattered treatment as the main effort and centralized treatment as supplementary" after investigating the polluting sources clearly and establishing treatment plans. The company purified each shop and each work section and established facilities for recycling and utilizing waste water, and built a structure at the general exit of waste and polluted water for key treatment.

Now, this company produces 567,000 tons of waste water each day. After treatment, retrieval and utilization, the value of water thus retrieved was worth more than 113,000 yuan.

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SHANGHAI PAPER PULP MILL REDUCES POLLUTION

Shanghai JIEFANG RIBAO in Chinese 21 Mar 82 p 1

[Article by correspondent Tang Rencheng [0781 0088 2110] and reporter Jiang Mengdan [5592 1125 0030]: "The Shanghai Paper and Pulp Plant Becomes a Clean, Uniform, Beautiful Factory"]

[Text] During the "all people decorum and courtesy month", a factory that specially utilized waste and created serious pollution--Shanghai Paper and Pulp Mill, was praised by the party committee of the city's light industry bureau as the model plant with a beautified environment throughout the whole light industry system. This factory spent 3 years changing itself from a "dirty, disorderly, poor" factory surrounded by foul smells, black liquids, white dust into a civilized factory that is "clean, orderly, beautiful." It has been praised many times as the advanced patriotic and sanitary unit of the ward, the bureau and the city.

The raw materials used by this factory in production were mostly residues left over from production by other plants. The scraps of wood needed a day amounted to 130 tons, and there were also a large quantity of waste alkaline liquid released by the printing and dyeing plants. During the process of using waste materials to manufacture pulp, three new types of waste products were produced: One was smelly gas which frequently spread to several kilometers away. The second was black liquid which was several times more concentrated than black ink. The third was white dust amounting to two full tons which spewed out from the large chimney each day. In the past, these pollutants profoundly damaged the surrounding school, hospital, factory and harmed the residents, and they made the factory premise very dirty. "The ground was covered with 'soy sauce soup', dust flew everywhere, entering the door required wearing rain boots, grass and trees did not live long." This was the people's vivid description of this factory.

In recent years, this factory insisted on actively treating the three wastes. The plant changed the chemical raw materials and used fully concealed procedures, thus it eliminated the foul smell. By reforming the technology and by increasing the retrieval and utilization rate of alkaline, the "black dragon" on the ground was captured. The new technique of using static electricity to remove dust conquered the "white dragon" in the sky. The environment of the plant underwent a fundamental change. On this basis, the plant further established a strict sanitation responsibility system. At work sections where there was a lot of dust, dusting after every loading was required. The pulp manufacturing shop had more than 1,600 glass windows that had to be kept clean constantly. Each of 18 workers cleaned about 200 glass windows a month. The cadres of the science laboratory worked as hard, they insisted on carrying out spot checks for sanitation once a month. When they had to attend meetings, they had to use morning or evening hours to make up for the time taken up by the meetings.

A few days ago we conducted a "spot check" without prior announcement. When we visited this plant, all we saw were clean windows, clean houses, uniformity and cleanliness, and even the dirtiest work section of the past was cleaned up, now, rain boots are no longer required. Especially attractive were several pots of flowers and fir trees, oleander and Chinese roses in this small horseshoe shaped factory. In the office building and living area were potted landscape and miniature trees emitting fragrance. The leadership of this plant told us, from 1979, they dug three chi of soil, removed the alkaline soil and shipped earth to the plant for planting trees and flowers to beautify the environment. The plant even hired a retired worker with two apprentices to plant a small nursery to cultivate potted flowers. They took care of the flowers and trees that had been planted. They established a strict system and demanded repayment for damages. Shops that had to dismantle flower platforms for capital construction had to obtain the approval by the plant administration, and the shops were responsible for rebuilding the flower platforms in their original form after completing capital construction. Now, this plant's more than 600 workers have 500 square meters (including a shop outside the premises of the plant) of green surface. This year, their goal is to have one square meter of green surface area per person and to make the factory even cleaner and more beautiful.

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SHENYANG SMELTER IMPROVES TECHNOLOGY, UPGRADES ENVIRONMENTAL PROTECTION

Beijing GUANGMING RIBAO in Chinese 5 Feb 82 p 2

[Article by Wang Ziqiang [3769 1311 1730], Zhang Jingde [1728 2529 1795]: "Shenyang Smelting Plant Improves Technology and Realizes Achievements in Both Production and Environmental Protection"]

[Text] The Shenyang Smelting Plant implemented technical improvements centered around environmental protection and for 4 consecutive years, it has realized achievements in both production and environmental protection. From 1978 to the end of 1981, the whole plant produced more than 400,000 tons of sulfuric acid worth more than 40 million yuan by utilizing fumes alone. The plant made a profit of more than 6 million yuan from this and aided the production of more than 120 units in agriculture, forestry, light industry and textile industry.

The Shenyang Smelting Plant was built during the 1930s. The equipment was obsolete. The amount of sulfur dioxide released through the 37 chimneys of the whole plant constituted 40 percent of the total amount of sulfur released in Shenyang City. The fumes polluted half of Shenyang City's air and the plant became a major polluting source. The state listed the plant as a unit which was ordered to treat pollution within a definite time limit.

In 1977, the leading cadres of the plant recognized in surveys and studies that the plant was situated in the center of the city, it produced serious pollution, and the masses complained strongly. To move the plant, to stop production, to ask for money for major reforms were not practical methods of improvement. The only way was to start out from the actual situation, be self reliant, and carry out technical improvement of the enterprise. They proposed a clear slogan "to seek survival and to seek development in environmental protection" they mobilized the cadres and the masses to join in the improvement of the enterprise.

Foreign experts suggested the use of the Mitsubishi method or the flash smelting method to treat pollution by fumes in the copper smelting shop. This required major changes and would cost 10 million yuan. The plant's leadership decided to start out from the plant's own economic strength and China's technical level after conducting surveys and decided to carry out improvements on the basis of presently available equipment. This could solve the problem with an investment of only 1 million yuan. Nearly 20 million yuan in investment could also be saved even if the acidification shop did not change to the use of the wet method.

Because the right road was selected, the "big poisonous dragon" of the copper smelting shop that produced 70 percent of the amount of sulfur released by the whole plant and that had been harmful to Shenyang for 40 years was brought under control by the end of 1979. The 34 low chimneys were also basically treated. In 1980, 280,000 tons of polluted water from technological processes were treated. Within five months, the amount of polluted water released was reduced by 94.3 percent from that of 1978, basically reaching the allowable limits established by the state.

In preparing the funds, they did not ask the higher authorities for money. They "consolidated" the plant's funds for renovation and improvement, funds for major repairs and the portion of funds in the percentage of profits for developing production. These provided 90 percent of the capital needed to improve the enterprise. From 1978 to 1980, they combined their efforts with major repairs and completed 37 projects in environmental protection and spent a total investment of 18.55 million yuan. After completion of these projects, the investment could be recovered in three years from the increased output of sulfuric acid, from the recovered negotiable metals, from conservation of water, and from exemption from fines for pollution. Over 20 million yuan could be saved. With the protection of worker's health, conservation in fuel, reduction of corrosion of machinery and reduced pollution of the plant's surroundings, the economic gain of the investment in environmental protection at the Shenyang Smelting Plant was more outstanding. During these three years, the value of industrial production and the profits of the whole plant also grew respectively by 7.7 percent and 30 percent annually, and the plant truly realized achievements in both production and environmental protection.

9296
CSO: 5000/4024

TWO-YEAR EFFORT REDUCES INDUSTRIAL POLLUTION IN BEIJING

Beijing GUANGMING RIBAO in Chinese 19 Apr 82 p 1

[Article: "Beijing City Combines Efforts With Industrial Readjustment to Actively Control Environmental Pollution, Over the Past Two Years, It Has Eliminated a Total of More Than 340 Sites of Industrial Pollution Along Sanhuan Road"]

[Text] Beijing City combined efforts with industrial readjustment to actively control environmental pollution. Over the past two years, the whole city invested a total of more than 140 million yuan and eliminated more than 340 polluting sites, constituting 42 percent of all the sites of industrial pollution along Sanhuan Road.

Beijing City included the elimination of environmental pollution as an important item of industrial readjustment. After conducting surveys and studies, concerned departments decided to use various methods to control 800 polluting sites along Sanhuan Road. Efforts were aimed at the fact that the heat treatment and casting professions are scattered and most of them are inside residential areas. The city's economic committee used the method of terminating the work sites and combining operations and moving the facilities to readjust the distribution beginning last year. Xuanwu Ward originally had 67 heat treatment shops. After readjustment, 37 were removed. In this way, dust and smoke and noise pollution were eliminated, and each year, more than 6 million kilowatt-hours of electricity could be conserved. The Second Powdered Metallurgical Plant near the Beijing Youyi Hospital created serious powder and dust and noise pollution and affected the surrounding environment. The city's economic committee invested 2.5 million yuan to move this factory to Daxing County. The Fifth Beijing Chemical Plant released a massive amount of poisonous liquids during the course of producing anion resin and the liquids polluted the nearby campus of Qinghua University. The teachers and workers of Qinghua University wrote a joint letter to the city government to complain and asked that the problem be solved. Now, concerned departments have ordered the plant to move the production of anion resin to the Seventh Chemical Plant which is farther away and treatment measures were arranged.

Concerned departments said that efforts must be combined with industrial readjustment to continue efforts to combine the 28 factories, to change their production, to move them away this year and to eliminate another 150 polluting sites.

9296
CSO: 5000/4038

THREAT OF FINES BRINGS REDUCTION IN POLLUTION FROM ELECTROPLATING

Beijing BEIJING RIBAO in Chinese 15 Feb 82 p 2

[Article by Gao Jingzhi [7559 0093 1807]: "General Internal Combustion Plant, Accordion Plant Accept Criticism, Leadership Emphasizes Treatment of Polluted Water; Results Are Realized in a Short Period"]

[Text] The Beijing General Internal Combustion Plant and the Beijing Accordion Plant humbly accepted criticism. The plants' leadership personally managed treatment of pollution and achieved visible results in a short period.

The leadership of these two plants did not emphasize environmental protection work in the past and the plants polluted the environment. Last November, the Zhaoyang Ward Environmental Protection Department decided to fine the units and the plant managers. The leaderships of these two plants took this decision seriously. They submitted their fines and paid close attention to the work of treating pollution. The party committee of the Beijing General Internal Combustion Plant conscientiously examined the problems that existed in environmental protection work of the past. The plant manager reviewed the work at a mass meeting. This plant promptly strengthened the environmental protection agency, increased the number of environmental protection personnel and mobilized the masses to propose a series of measures to treat pollution. For two months, the oil content in waste water of this plant dropped considerably. At present, they are taking further measures to lower the content of oil, phenol, and cyanogen in waste water released by the whole plant to quickly meet the standards set by state regulations.

In the past, pollution by electroplating at the Beijing Accordion Plant was serious. The engineering projects for treating pollution could not be completed for a long period. This time, the plant manager and assistant manager of the plant personally went to the construction site and engaged in capital construction together with the workers. In only 2 months, the work that had been pending for several years was completed. Now, the engineering projects for treating water polluted from electroplating at this plant have basically been completed.

9296
CSO: 5000/4026

FUJIAN LAUNCHES SURVEY TO PINPOINT SOURCES OF POLLUTION

Fuzhou FUJIAN RIBAO in Chinese 10 May 82 p 2

[Article: "Providing a Reference for Plans To Prevent and Control the 'Three Wastes', the Province-wide General Survey of Polluting Sources Continues"]

[Text] The province-wide general survey of polluting sources organized by the environmental protection department has been launched in nine localities recently.

The purpose of this general survey is to gain an overall understanding of the main causes of pollution in Fujian, the main pollutants, the polluting sources, the pollution system and the polluted areas for drawing up the "sixth five-year plan" to control the "three wastes" and to provide a reference for controlling new polluting sources.

The subjects of the survey are enterprises above the county level that release pollutants and the units subordinate to the counties that cause serious pollution. The emphasis is on large and medium sized enterprises, enterprises of the province and the prefectures and enterprises that do not implement the "three simultaneous efforts". This survey will also gather samples from the key polluting sources that cause widespread pollution, that cause a lot of damage and that have been the target of complaints. Surveyed data will be tabulated, compiled and analyzed. A file will be established on the polluting sources and a distribution map of the polluting sources will be drawn up. On the basis of the general survey, the environmental protection department will cooperate and supervise concerned departments and enterprises to compile a "sixth five-year plan" for controlling the "three wastes".

This work is expected to conclude in October. The Provincial Environmental Protection Bureau will invite experts of the Chinese Environmental Sciences Academy to Fujian to guide the work.

9296
CSO: 5000/4045

LIAONING REGISTERS SUCCESS IN TURNING BACK ENCROACHING DESERT

Beijing GUANGMING RIBAO in Chinese 19 Apr 82 p 1

[Article by Dong Wenxue [0157 2429 1331]: "Improving the Ecological Environment of the Desert, Promoting Agricultural Production, Liaoning Achieves Results in Popularizing the Technique of "Stabilizing the Sand at Zhanggutai and Afforestation"]

[Text] The Sand Stabilization and Afforestation Research Institute of Liaoning Province successfully developed the technique of "Stabilizing the Sand at Zhanggutai and Afforestation." This has served to improve the ecological environment of the desert and to promote agricultural production visibly. At present, nine provinces and autonomous regions are popularizing this technique.

At the beginning of the 1950s, the Sand Stabilization and Afforestation Research Institute of Liaoning Province was founded. It is located at Zhanggutai in Zhangwu County in Liaoning on the southeastern edge of the Ke'erxin Desert in the Northeast. In the past, there was a lot of shifting sand, sand dunes overlapped each other and lowlands weaved through the area. The shifting sand dunes were usually 2 to 11 meters high with the highest reaching over 30 meters. Vegetation was sparse. Weathered lowlands were distributed among the sand dunes. There were also large expanses of stationary desertland. The desert land was mostly infertile quartz sand. The content of humus was very low, the soil lacked nitrogen and phosphorus, and the physical grains of the soil were few. Here, strong winds blow frequently in spring, winds with a velocity of more than 50 meters per second blow the sand from the ground 240 times a year. The greatest surge in wind velocity could reach 32 meters per second. When the wind blows, the sand shifts, covering cultivated land and livestock farms, blocking roads, burying houses, and each year, over 40 percent of the farmland suffers from weathering and is covered by sand. Sometimes, farmland is destroyed two or three times, and sometimes the farmland does not produce any harvests. The people's life here is very difficult.

After the Sand Stabilization and Afforestation Research Institute of Liaoning Province was founded, it overcame many difficulties, and it studied and summarized a comprehensive method of controlling sand by "using plants to stabilize the sand supplemented by artificial sand breakers" after stabilizing 240 hectares of land and planting a pine forest in the desert land covering 2,000 hectares. The institue selected five sand stabilizing shrubs suitable for growth at different parts of the sand dunes, salix flavida, chabage artemisia, lespedeza bicolor, caragana sinica, and false indigo. It found the successful experience of cultivating pinus sylvestris in the desert land and formed a complete technique of "Stabilizing Sand at Zhanggutai and Afforestation". After the Wangjia Brigade of the Sihecheng Commune in Zhangwu County popularized this technique, agricultural production developed greatly. In the past, wind and sand caused serious damage. The per mu yield of food grains was only about 100 jin. The local people lived a very difficult life because of a lack of food grains and scarce firewood. In 1964, they began using the technique of "stabilizing the sand at Zhanggutai and afforestation." A total of 280 hectares was forested. The ecological environment gradually improved, and agricultural production was stimulated. Last year, per mu yield of food grains showed an increase of more than 2.5 times over 1964. A total of 30,000 bunches of firewood was gathered and more than 500,000 jin of straw were gathered. This not only solved the problem of firewood for the masses of the county, there was a surplus of straw for their own use. The number of cattle and sheep in fences increased by more than one-fold over that before the sand stabilization efforts. Stalks were also returned to the fields. After many localities utilized the technique of "stabilizing the sand at Zhanggutai and Afforestation", the percentage of covering by vegetation increased, and natural conditions and soil texture changed. The agriophyllum squarrosum and salix flavida and such plants representative of desert plant life originally growing in the land of shifting sand and half shifting sand gradually disappeared. Now, a primitive grassland has emerged. Natural pine saplings have emerged under the forest and fugi are growing. According to surveys of the desert land in Zhangwu County, the direct gain from forestry has visibly increased. The average height of the desert pinus slyvestris with a life of 25 years is 9.9 meters and the girth is 16.28 centimeters. Each mu has an accumulation of 7.5 cubic meters (of wood). After growing the pinus sylvestris forest for 10 to 12 years, each hectare can produce 9,000 to 10,000 kilograms of firewood and 450 to 640 rafters. The pinus sylvestris of 20 to 23 years of life can produce 240 to 650 short poles per hectare from intermittent felling. The reserve of each hectare can reach 7.66 cubic meters.

At present, the technique of "stabilizing sand at Zhanggutai and Afforestation" has already been popularized and applied in the nine provinces and autonomous regions of Xinjiang, Gansu, Shanxi, Hebei, Ningxia, Jilin, Shaanxi and Inner Mongolia. Results have been achieved at all of these places. For several years, the United Nations inspection team and experts and inspection teams from more than 20 nations have visited this institute.

9296
CSO: 5000/4037

DEFORESTATION PROMPTS PLAN TO SUBSTITUTE COAL FOR FIREWOOD

Kunming YUNNAN RIBAO in Chinese 30 Mar 82 p 1

[Article: "Use Coal as a Substitute for Firewood To Protect the Forests"]

[Text] Curing tobacco and forestry provide the best possibilities in Yunnan to develop diversification. Since the Third Plenum, the enthusiasm of commune brigades to develop the production of flue-cured tobacco has risen along with implementation of the economic policies in farm villages. Last year, the area of flue-cured tobacco plants throughout the province reached 950,000 mu. The yield surpassed 3.3 million dan. Production of flue-cured tobacco has already become an important item of the farm village commune brigades to develop diversification and to increase the economic income of the collective and the commune member. It is also an important pillar to increase Yunnan's economic and financial revenue. In the future, we must fully develop "Yunnan tobacco" which is uniquely superior in quality, increase the output of high quality tobacco and continue to develop the production of good flue-cured tobacco.

The development of flue-cured tobacco has brought about the problem of protecting the forests. This must be highly emphasized by every locality. In recent years, because of the expansion of the area of flue-cured tobacco and the large increase in output, many commune brigades and commune members have built additional curing rooms and have felled trees in a massive way for curing tobacco leaves. Using the Xundian autonomous county of the Hui Nationality and the Yi Nationality as an example, each year, 10,000 cubic meters of timber are felled just to cure tobacco leaves. This year, plans call for continued development of flue-cured tobacco and it is estimated that the felling of timber will increase to 16,000 cubic meters. If every locality does the same thing as Xundian County, then the amount of timber felled throughout the province will be shocking! Doing this year after year will necessarily produce the following result: Flue-cured tobacco will develop but the forests will be destroyed and more seriously, continued felling will bring about erosion of the soil, the climate will deteriorate, and finally, the superiority of flue-cured tobacco will be destroyed. Therefore, while each locality develops the production of flue-cured tobacco, it must pay special attention to considering the past and the future, and it cannot destroy one superiority to develop another superiority.

We must develop the production of flue-cured tobacco tobacco and also protect the forests. In view of the present situation, the method that will satisfy both sides is to use coal as a substitute for firewood to cure tobacco leaves. Many localities (prefectures) and counties in our province produce coal. There are conditions for using coal as a substitute for firewood. Some counties have already done so; some counties are preparing to start this year. The important thing in popularizing the use of coal as a substitute for firewood is to prepare the cadres and the masses ideologically so that they can understand the importance of protecting the forests. They cannot fell the forests without control just to develop flue-cured tobacco and bring disaster upon later generations. At the same time, we must conscientiously solve the concrete problems brought about by the popularization of coal as a substitute for firewood, for example, the problem of capital for purchasing coal, the problem of increased cost, the problem of tobacco curing techniques, the problem of transportation, the problem of building and maintaining new roads, etc. The commune brigades and commune members must be helped to solve these problems concretely before the popularization of coal as a substitute for firewood can be implemented at the right places.

Viewing the experience of Nanhua County, we see that popularization of coal as a substitute for firewood should be done early and it should not be delayed. Every locality must do the various jobs beforehand and supply the coal to be used for curing tobacco early according to plan starting from now. If the work is done late, and if a particular link becomes a "difficulty" in the process and the effort cannot be implemented, then, there is the danger that the popularization of coal as a substitute for firewood would not succeed and the destruction of forests would continue as before.

9296
CSO: 5000/4045

SHANXI COAL MINES JOIN AFFORESTATION EFFORT

Taiyuan SHANXI RIBAO in Chinese 28 Mar 82 p 1

[Article: "Digging One Ton of Coal Underground and Planting One Tree on the Ground, Jincheng County Utilizes the Superiority of Coal to Plant Trees and Forests"]

[Text] Deputy Secretary Niu Yinchuan [3662 0603 1557] of the Chinese Communist Party Committee in Jincheng County reported: Under the campaign "to dig one ton of coal underground and to plant one tree on the ground," Jincheng County utilized the superiority of coal to plant trees and forests on a broad scale and to develop forestry production. Now, the whole county has appropriated 200,000 yuan to cultivate 10,000 mu of saplings and plant 80,000 paulownia trees.

Jincheng County has always been known as the home of coal. The whole county has coal fields covering 1,000 square kilometers, constituting 46 percent of the total areas. The underground coal reserve amounts to more than 3 billion tons. At present, there is a total of 204 coal mines and the annual output is 11 million tons of coal. The whole county has 915,000 mu of barren mountains suitable for afforestation, larger than the area of cultivated land by more than 80,000 mu. But the work of planting trees and afforestation is poor. The area of forests in the county is only 280,000 mu, and most of the area is natural forests. Artificial forests constitute less than 70,000 mu. One important reason that forestry production could not progress is that most of the mountains suitable for afforestation are distributed in places where there are no coal resources. These regions have singular enterprises, production is backward, the income of farmers is low, and there are no surplus forces to develop forestry. The income from coal in coal producing regions is high, the economic conditions are rich, and there are surplus forces that can be invested in the development of forestry, but there is no land suitable for afforestation. To develop the advantages and avoid the shortcomings and to develop superiority, the county committee proposed the campaign "to dig one ton of coal underground, to plant a tree on the ground, to use black (coal) to preserve the green (forests), to use the green to stimulate agriculture." It ordered county-run coal mines and commune and brigade operated coal mines to collect one jiao of forest cultivation fee per ton of output of coal. The funds were jointly managed by the county coal department and the forestry department. The whole county used the funds uniformly to plant trees for forestation. In the spring of this year, 200,000 yuan had already been appropriated as investment in forestry to cultivate 10,000 mu of saplings. Preparations have been made to plant 100,000 paulownia trees. The 5C,000 cadres and workers in offices and factories and mines were ordered to plant two trees per person and to keep the trees alive. More than 80,000 trees have already been planted. With the addition of the movement to plant trees by all the people, the whole county has already planted nearly 1 million trees.

9296
CSO: 5000/4043

BRIEFS

GUANGDONG CONTROLS WASTE MATERIALS--According to statistics recently compiled by relevant departments, since the beginning of this year, Guangdong Province has spent some 54 million yuan on controlling some 1,360 items of residue, exhaust gas and waste liquid. At present, the controlling of 747 items has been completed. Following the rapid industrial development, urban environmental pollution has become more and more serious. Many units have regarded reducing the harm of pollution and protecting the environment as important work. Many enterprises have not only protected the environment but also turned waste materials into valuable ones. In the past Maoming Petroleum Industrial Company drained 310,000 tons of polluted water a day into rivers. After exercising control, not only has it reduced pollution but also saved 240,000 tons of clean water a day. Every year, it can recover 21,000 tons of oil from polluted water, the value of which is some 4.3 million yuan. Although the province has done some work in controlling residue, exhaust gas and waste liquid, only 24 percent of polluted water, 39 percent of noxious gas and 16 percent of residue in industry in the whole province can be dealt with. The urban areas of Guangzhou Municipality can reduce only 30 percent of their dust and Foshan Municipality can reduce only 6.4 percent of its dust. [Guangzhou Guangdong Provincial Service in Mandarin 1000 GMT 2 Jul 82 HK]

HUBEI PUBLIC HEALTH CIRCULAR--The Hubei Provincial Public Health Bureau and the Provincial Supply and Marketing Cooperative recently issued a joint circular, demanding that the public health and supply and marketing units of all prefectures, municipalities and counties do well in preventing agricultural chemical poisoning. The circular called for devoting major efforts to publicizing knowledge of prevention of agricultural chemical poisoning. In connection with the actual situation of all localities, the personnel taking care of agricultural chemicals must be trained and instructions on the use of agricultural chemicals must be dispatched to all households. In order to ensure that the masses understand how to use agricultural chemicals, spot checks must be carried out by the public health departments. Moreover, practical measures must be carried out to prevent agricultural chemical poisoning. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 10 Jun 82 HK]

ENGLISH-CHINESE ENVIRONMENT DICTIONARY--A "Practical English-Chinese Dictionary on Environmental Protection" has been published recently by the Sichuan People's Publishing House. It can be used by people engaged in scientific research in environmental protection work, teachers and managerial personnel. This book is the first foreign language reference book of China's endeavors in environmental science and technology. More than 24,000 English terms on environmental protection have been selected and translated. The content mainly includes environmental ecology, environmental pollution, environmental engineering, environmental monitoring, environmental management, environmental meteorology, environmental geography and environmental chemistry. [Text] [Beijing GUANGMING RIBAO in Chinese 10 May 82 p 2] 9296

HEILONGJIANG WATER POLLUTION--Harbin Municipality, Heilongjiang Province, has adopted measures to combat water pollution along the Songhuajiang River to improve sanitation at summer resorts. The city organized departments concerned, enterprises and units which process oil and use oil in production to conduct a joint inspection. Over 28 units throughout the city were discovered to cause great oil leakage in the process of production and oil storage. The Harbin municipal environment protection bureau has warned them to take measures and strengthen management to prevent further pollution; otherwise, they will be punished according to law. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 20 Jun 82 SK]

MODIFYING BOILERS TO REDUCE POLLUTION--Last year, Zongwen Ward planned to modify 95 boilers; it actually completed work on 103 units. The environmental protection cadres of this ward often went to the basic levels to personally coordinate and help treat pollution. In the past, the boiler of the Physical Education School in Zongwen Ward created serious pollution. Cadres of the environmental protection department went to the school many times to talk and mobilize the school authorities. This effort won the attention of the leading units at the school and they modified the boilers in time. The chimney of the Zongwen Ward Bean Products Plant frequently spewed black smoke. Black powdery dust spread everywhere. Over 300 residents nearby signed a joint letter to complain. Environmental protection cadres went to the plant many times to mobilize the workers. After the plant decided to modify the boiler, the environmental protection cadres assisted in providing guidance and made it easy for the plant to treat pollution. After the boiler was modified, the chimney of this plant did not spew black smoke anymore. The dust released basically met the standard set by state regulations. [Text] [Beijing BEIJING RIBAO in Chinese 15 Feb 82 p 2] 9296

POLLUTION OF QINGPU XIAN WATERWAYS--To protect the water source of Qingpu and the tourist area of Dianshan Lake so that the water quality will not be polluted, the county people's government recently issued an official notice to control factories that are currently releasing sewage. The county government decided to move the existing 36 electroplating factories and sites away from the water source at the upper reaches of the county and the Dianshan Lake tourist area and to appropriately concentrate them in one locality. Those factories that are irrationally distributed, that cause serious pollution and that do not have conditions for treating pollution have been ordered to shutdown, to cease production, to combine operations and engage in other types of production in order to guarantee that the water quality will not be polluted again. Concerned supervisory departments of the county began from the second half of last year to strictly control the spread and development of pollution by the three wastes and they refused to approve expansion and new construction of the electroplating profession. They also limited the area of production by existing electroplating factories and prohibited them from expanding their scale at will. [Li Yuan] [Text] [Shanghai JIEFANG RIBAO in Chinese 23 Apr 82 p 2] 9296

COMPLETION OF CONTROL PROJECTS--After the common efforts of concerned sectors, Shanghai has completed 612 key projects to control the "three wastes" during the past year. These completed projects can treat 148,000 tons of toxic organic sewage a day, 1.448 million cubic meters of waste gases an hour, and reduce the amount of smoke and dust released into the air each year by more than 20,000 tons. They also control nearly 200 sources of noise which benefit several thousand residents. At the same time, they have also recovered a large amount of metal and chemical raw materials for the state. [Tao Guanyu] [Text] [Shanghai JIEFANG RIBAO in Chinese 5 Apr 82 p 1] 9296

TIANJIN SEWAGE TREATMENT PLANT--Tianjin City has begun building a sewage treatment plant at Jizhuangzi in the city's suburb. The plant can treat 260,000 tons of sewage a day. It is the nation's largest sewage treatment plant at present. The Jizhuangzi sewage system contains a total of more than 8,000 cubic meters of sewage. The area of spillage is 3,770 hectares. The sewage treatment plant uses biological methods for two-step treatment of sewage. The mud is digested under medium temperature to produce marsh gas as a source of energy and to kill roundworm larvae. The mud in the digestive pool can be used as farm fertilizer. Completion and the start of production of this plant are scheduled for the end of 1983. [Text] [Beijing RENMIN RIBAO in Chinese 27 Mar 82 p 1] 9296

ENVIRONMENTAL POLLUTION BOOKS--The Commercial Press has published two books on the prevention and control of environmental pollution. Written by comrades Chen Jingsheng [7115 7234 3932] and Chen Duchang [7115 4648 2490] of the Geography Department of Beijing University, the book is entitled "Environmental Pollution and Simple Principles of Protection." It relates on a broad basis problems in the atmosphere, problems in water, problems with farm chemicals, problems in the soil, problems of heavy metals, radioactive substances and noise from the ecological viewpoint, and introduces basic knowledge about environmental pollution and protection. The book is written in a popular and easy to read style. The book entitled "Environmental Pollution" written by American scholar Lawrent Hodges and translated by Wang Yanxiang [3679 3508 1651] uses environmental problems in the United States and Western Europe as actual cases to describe the relationship between environmental pollution and increases in population, production and consumption. It also analyzes the physical, chemical and physiological mechanisms that produce pollution, and introduces engineering projects and measures to treat various types of pollution problems. It also describes the importance of environmental legislation. This book will help China's environmental protection workers understand the current science and technology of environmental engineering, and the economic and general situation of environmental control in western nations. [Text] [Beijing GUANGMING RIBAO in Chinese 22 Jan 82 p 3] 9296

END

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Worldwide Report

ENVIRONMENTAL QUALITY

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LABOR PARTY PROPOSES SPECIAL STUDY OF TOXIC WASTE DUMPING

Canberra THE AUSTRALIAN in English 2 Aug 82 p 2

[Article by Ted Knez]

[Text]

THE Labor Party wants a special authority set up to control the dumping of hazardous chemicals to help combat the "slow poisoning" of Australia.

The proposal, outlined yesterday by the Opposition spokesman on the environment and conservation, Mr Stewart West, is central to ALP policy which would be implemented under a federal Labor government.

Some environmentalists fear that toxic waste leaching from dumping sites will eventually poison waterways and land.

Mr West agreed that such fears were justified and said that the dumping of chemicals was creating an environmental time-bomb requiring massive clean-up operations in the future.

He said that 15,000 tonnes of "intractable waste" were stored in factories around Sydney because there was no adequate means of disposal.

"The metropolitan waste disposal authority cannot accept them at its land disposal facility, and the NSW Government has been forced to drop its plan for an incinerator in the face of local community opposition," Mr West said.

The 15,000 tonnes of waste could only be disposed of in a high-temperature incinerator of the type the NSW Government proposed to construct.

Incinerator

"The Federal Government must get involved and set up such a high-temperature incinerator for all the States to use," Mr West said.

He said that under the ALP plan, an environmental contaminants authority, directly responsible to the appropriate minister, would be established to monitor the disposal of toxic wastes.

Working with the National Occupational Health and Safety Commission, the authority would set up a compulsory and comprehensive licensing system for hazardous chemicals.

Mr West said: "This will involve compilation of a national register of existing and new chemicals and the evaluation of their potential hazards.

"Those chemicals in industrial use will be regulated by the National Occupational Health and Safety Office.

"National standard procedures for the transport and permanent disposal of hazardous chemicals will be developed by the authority.

"This will include a multiple docket system to identify and keep track of these chemicals from their production through to their ultimate disposal.

"NSW and Victoria are the only States where adequate identification and records of waste disposal are kept."

Mr West said constitutional power over corporations, trade and commerce and taxation would enable the Federal Government to take the necessary action.

"Increasingly, industrial, agricultural and domestic chemicals are creating many difficulties relating to their use in the work place, safe transport and disposal, and their long-term health affects on the community," he said.

"The Federal and State Governments have failed to confront this problem."

Mr West said the Federal Government's voluntary notification scheme for new chemicals was inadequate.

"The scheme is not mandatory, cannot cope with the high rate of introduction of chemicals and does not cover existing chemicals," he said.

CSO: 5000/7563

DROUGHT CUTS VALUE OF GRAIN CROP BY $300 MILLION

Canberra THE AUSTRALIAN in English 2 Aug 82 p 3

[Article by Alex Greig]

[Text]

DROUGHT has reduced the value of the nation's grain harvest by $300 million and will strip up to $130 million for every further 10 days it lasts.

Estimates of this year's wheat crop alone, originally predicted to be 16 million tonnes, have been cut to between 10 and 14 million tonnes.

Spokesmen for farmers and graziers associations in four States say that unless the grain belt gets good rains in the next three weeks, the harvest would be disastrous.

South Australia, Victoria and Western NSW are the hardest hit — drought is affecting up to 75 per cent of dry farming regions.

The secretary of South Australia's Farmers and Stock Owners Grain Committee Executive, Mr Terry Inglis, said as much as 30 per cent of the State's crop was probably lost.

"The northern regions of Eyre Peninsular, large sections of the mid north and the northern Murray Mallee have been badly hit," Mr Inglis said.

"These are dry land farming regions which have been particularly hard hit and even if rain falls now it is doubtful that many crops in these areas would recover.

"We are looking at a loss of up to $150 million on last year's figures," Mr Inglis said.

Victoria's northern, southern and east Mallee areas are badly affected with the Victoria Grain and Elevator Board already reducing the predicted harvest from these areas by at least 30 per cent.

Wimmera farmer and member of the Victorian Farmers and Graziers Executive Committee, Mr F.W. Drum, said yesterday large areas in the Mallee had not been sown because of insufficient rains to start the seas and large areas which had been sown had not germinated.

Mr Drum said Victoria's crop would be down 20 per cent this year because of the drought and loss in money terms of $90 million to $100 million.

"It will be worse if we don't get these spring rains within the next three weeks," he said.

"I'd say for wheat alone, for every week without rain, the total wheat harvest across Australia will drop up to a million tonnes. At $110 to $130 a tonne, that's a hell of a lot of money and business confidence down the drain."

West Australia is faring better with an average harvest expected if rains fall within the next few weeks.

Coastal areas in the west as in Victoria, South Australia and NSW are holding up well.

Chairman of the West Australian Pastoralists and Graziers Grain Committee, Mr W.T. Scott, said rain was essential within the next two weeks for the State's dry grain growing areas.

"All of our crops have been late in the eastern part of the wheat belt and its still possible for a reasonable year provided we get rain in the next fortnight or so," he said.

NSW is suffering badly with 75 per cent of its dry western regions already proclaimed drought affected.

More than five million tonnes of wheat were produced in NSW last year, but this year's harvest will only be a pale shadow of that figure, according to experts.

CSO: 5000/7563

ENVIRONMENTAL COST OF HUNTER VALLEY INDUSTRY WEIGHED

Sydney THE SYDNEY MORNING HERALD in English 20 Jul 82 p 17

[Text]

FOR some, the new wealth in the Hunter must be weighed against its social and environmental costs.

Until April, the most publicised environmental controversy was the threat to the region's celebrated wine industry from the effect of fluoride emission on the grape vines from the large aluminium smelters.

With the cancellation of the proposed $640 million Lochinvar smelter, that threat has eased temporarily.

But the wine-makers would rest easier if the site for the proposed smelter, located on the doorstep of the vineyards, was sold.

The Lochinvar smelter proposal was the subject of a government inquiry and local university research.

Late last year, Mr Frank Murray, a Newcastle University researcher began spraying fluoride on some of the grape vines at the George Hunter State Vineyard, Allandale, in control experiments financed by the NSW State Pollution Control Commission.

According to Mr Murray grape vines definitely are sensitive to fluoride pollution. His job is to establish at what levels the shiraz grape variety, (the most common grape vine in the Hunter Valley) is injured by fluoride in the air.

To achieve this Mr Murray has developed a technique not previously used in Australia in which open-top chambers, 2.5m tall and 3m in diameter, are constructed around the grape vines in a vineyard.

Mr Murray says the conditions within the chambers are practically identical to the conditions of the surrounding vines in the vineyard.

Wines within six chambers at the George Hunter State Vineyard were continually exposed to various levels of fluoride in the air.

The air and grape vines within the chambers were monitored for fluoride concentration, and the plant responses were measured.

The results of this research should be known soon.

But according to Dr Howard Dick, a development economist in the Department of Economics at Newcastle University, in the long run power stations and not aluminium smelters are likely to be the most serious cause of air and water pollution.

In an article published last year in the Current Affairs Bulletin, Dr Dick maintained that coal-burning power stations were dirty plants.

"They admit they emit not only fly ash with substantial fluoride content, but also sulphur dioxide and nitrogen oxide," he wrote. "On contact with water the oxides form acids. The resultant acid rain not only affects vegetation directly but also pollutes the entire water system, with consequences for irrigation, marine life and human beings."

He said the study of the effect of power stations on the region was urgently needed.

The Eraring Power Station now under construction at Lake Macquarie may lead to other environmental problems.

It has been estimated that three times the total volume of the lake will be required to cool the condensers of the power station under normal operating conditions.

The significance of this is in the likely effects on aquatic life of a radical change in water temperature near the power station discharge canal.

While the normal water temperature range of the lake is from 13 degrees Celsius in winter to 28 degrees in summer, water from the station entering the lake has a maximum temperature of 35 degrees.

Mr G. Henry, a marine biologist with the NSW Department of Fisheries, who has investigated the effects of Munmorah Power Station on fish and ponds in the Tuggerah Lakes, has said that 36 degrees seemed to be a temperature threshold for fish.

"If the water temperature rises a few degrees above this level there could be a tremendously harmful effect on fish," Mr Henry said.

Others have little doubt that the new coal mining developments will dramatically change the landscape of the region.

Open-cut mining has often been criticised as being destructive of the environment although pits are gradually refilled and revegetated.

This is little consolation to farmers who are worried about the effect of coal dust on their yields.

Dairy farming is located principally along the adjacent areas to the major streams and tributaries taking up about 16 per cent of the total agricultural surface in the Hunter.

These farms produce more than 185 million litres of milk each year – half of which goes to the Sydney Metropolitan market.

Housing is the most obvious social problem associated with the recent rapid development in the Hunter.

In particular, the mining towns of Muswellbrook and Singleton have been unable to meet the housing demands caused by the growth and population as a result of the influx of workers who serve the surrounding open-cut mines.

Due to the housing shortage, in Singleton rents are still over $200 a week and three-bedroom houses sell for between $85,000 and $100,000 – extremely high prices for a country centre.

In 1981 it was reported that more than 7,000 people in the Hunter were living permanently in caravans as a result of the housing crisis.

CSO: 5000/7562

BEACH EROSION LESS THAN THOUGHT, STUDY INDICATES

Brisbane THE COURIER-MAIL in English 20 Jul 82 p 16

[Article by Bill Ord]

[Text]

GOLD COAST beaches are not entirely safe from heavy occasional erosion, but they are much more secure than was thought until very recently.

This is the major message of a report which has just gone to the Gold Coast City Council from the Queensland Beach Protection Authority.

The authority said in Brisbane yesterday it had just completed a "sand transport study" which showed that recent erosion losses on the most vulnerable Gold Coast beaches were a lot less than feared.

But it added this was no reason for complacency.

Its original study of the problem, made about 10 years ago, suggested Gold Coast beaches needed about 12 million cubic metres of sand to replace what had then been lost by natural and man-made causes such as the destruction of dunes for building development.

This figure still stood, but the pumping of 1,400,000 cubic metres of sand on to the Surfers Paradise beach in 1974 and the later "feeding" of beaches between Currumbin and Tallebudgera, especially at Palm Beach, had blunted the edge of the erosion threat.

But the authority's senior engineer, Mr Hector Macdonald, said yesterday it would be a long and expensive battle to banish the threat in all but the most exceptional of storm circumstances.

"With, say, about another nine to 10 million cubic metres of sand replenishment needed in the long term, the Gold Coast City Council is looking at a bill of about $20 million to $30 million at today's prices.

"Still, the outlook, if not the cost, is most encouraging and bears out what the authority has been saying all along: there's no need for panic."

Mr Macdonald said "in no circumstances" must the existing Gold Coast beach dunes system be touched.

CSO: 5000/7562

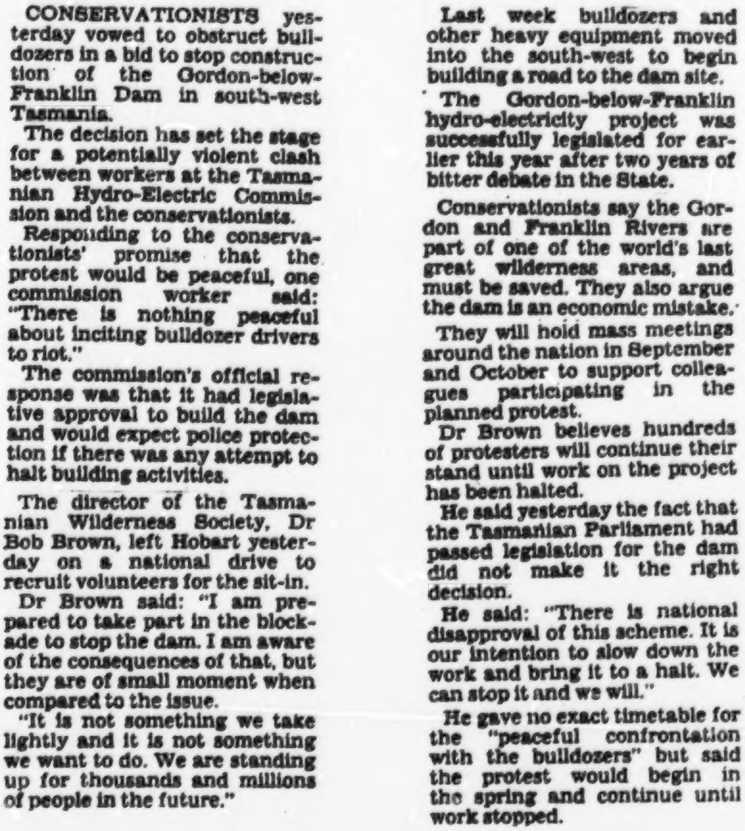
TASMANIAN DAM OPPONENTS PLAN BLOCKADE OF BULLDOZERS

Recruitment Campaign

Canberra THE AUSTRALIAN in English 27 Jul 82 p 2

[Article by Peter Dwyer]

[Text]



CONSERVATIONISTS yesterday vowed to obstruct bulldozers in a bid to stop construction of the Gordon-below-Franklin Dam in south-west Tasmania.

The decision has set the stage for a potentially violent clash between workers at the Tasmanian Hydro-Electric Commission and the conservationists.

Responding to the conservationists' promise that the protest would be peaceful, one commission worker said: "There is nothing peaceful about inciting bulldozer drivers to riot."

The commission's official response was that it had legislative approval to build the dam and would expect police protection if there was any attempt to halt building activities.

The director of the Tasmanian Wilderness Society, Dr Bob Brown, left Hobart yesterday on a national drive to recruit volunteers for the sit-in.

Dr Brown said: "I am prepared to take part in the blockade to stop the dam. I am aware of the consequences of that, but they are of small moment when compared to the issue.

"It is not something we take lightly and it is not something we want to do. We are standing up for thousands and millions of people in the future."

Last week bulldozers and other heavy equipment moved into the south-west to begin building a road to the dam site.

The Gordon-below-Franklin hydro-electricity project was successfully legislated for earlier this year after two years of bitter debate in the State.

Conservationists say the Gordon and Franklin Rivers are part of one of the world's last great wilderness areas, and must be saved. They also argue the dam is an economic mistake.

They will hold mass meetings around the nation in September and October to support colleagues participating in the planned protest.

Dr Brown believes hundreds of protesters will continue their stand until work on the project has been halted.

He said yesterday the fact that the Tasmanian Parliament had passed legislation for the dam did not make it the right decision.

He said: "There is national disapproval of this scheme. It is our intention to slow down the work and bring it to a halt. We can stop it and we will."

He gave no exact timetable for the "peaceful confrontation with the bulldozers" but said the protest would begin in the spring and continue until work stopped.

Police Counteraction Plan

Canberra THE AUSTRALIAN in English 28 Jul 82 p 3

[Article by Peter Dwyer]

[Text]

POLICE in Tasmania are preparing a secret strategy to prevent protestors blockading bulldozers involved in the building of the Gordon-below-Franklin dam in the southwest of the State.

The strategy is being prepared in consultation with the Hydro Electric Commission, which will build the dam, and the Tasmanian Government.

The preparation of the strategy was confirmed yesterday by the Tasmanian Premier, Mr Gray, who described plans to attempt to stop the dam as outrageous.

Mr Gray said conservationists who on Monday vowed to stop the bulldozers were planning to break the law and would have to face the consequences.

He said: "These people are being deliberately provocative and irresponsible. They are moving to set up a situation where, unless there is restraint on the part of all Tasmanians, there is a risk of injuries."

Mr Gray would not say whether a declaration of a state of emergency in Tasmania would be part of the strategy and would not say what other action he, the HEC or the police were considering.

On Monday the director of the Tasmanian Wilderness Society, Dr Bob Brown, forshadowed the blockade in a bid to save from flooding what conservationists say is one of the world's last great wilderness areas.

Mr Gray said the police would have the responsibility of protecting all involved in any confronation near the dam site and to prosecute anyone they considered had broken the law.

"They will do what they can to ensure that there is no violence. I know that the HEC employees will show restraint and expect all others to show similar restraint," he said.

"We are not going to allow anyone to obstruct the progress of work on this dam. Delay in getting on with it has already cost 8000 jobs in this State.

"We are not going to allow people to lie across the paths of bulldozers. Action to stop the HEC from carrying out what is it's legislative right would seem to me to be outside the law."

Mr Gray said he doubted if Dr Brown would get the support he needed for the blockade even within Tasmania.

He rejected claims by Dr Brown that the State could not afford the dam.

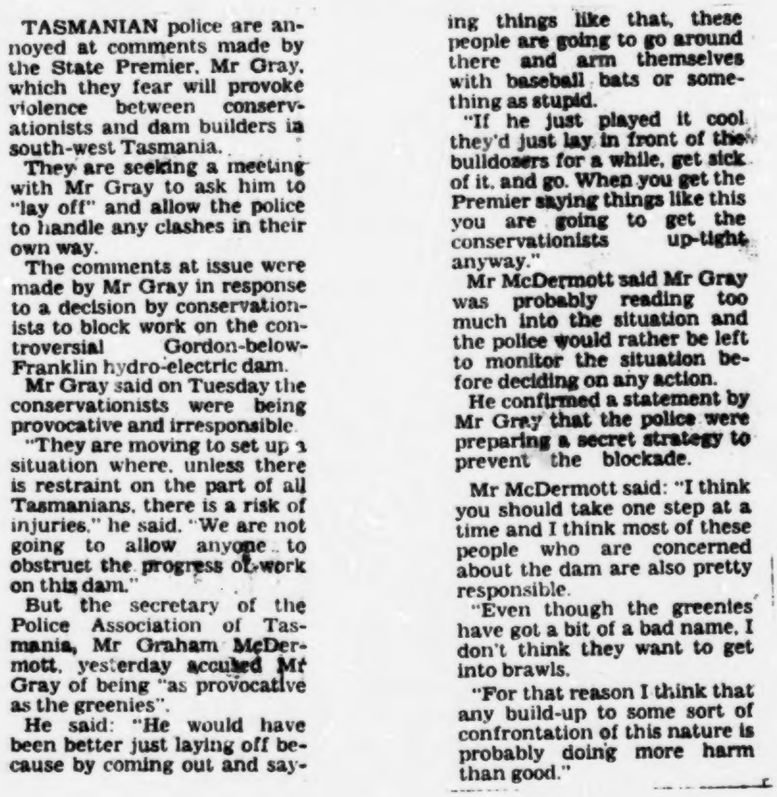
Instead, he accused Dr Brown of conducting a dishonest campaign throughout Australia to discredit a power development which "has the support of a vast majority of Tasmanians and is vital to the economic well being of this State".

Police Attack on Gray

Canberra THE AUSTRALIAN in English 29 Jul 82 p 3

[Article by Peter Dwyer]

[Text]



TASMANIAN police are annoyed at comments made by the State Premier, Mr Gray, which they fear will provoke violence between conservationists and dam builders in south-west Tasmania.

They are seeking a meeting with Mr Gray to ask him to "lay off" and allow the police to handle any clashes in their own way.

The comments at issue were made by Mr Gray in response to a decision by conservationists to block work on the controversial Gordon-below-Franklin hydro-electric dam.

Mr Gray said on Tuesday the conservationists were being provocative and irresponsible.

"They are moving to set up a situation where, unless there is restraint on the part of all Tasmanians, there is a risk of injuries," he said. "We are not going to allow anyone to obstruct the progress of work on this dam."

But the secretary of the Police Association of Tasmania, Mr Graham McDermott, yesterday accused Mr Gray of being "as provocative as the greenies".

He said: "He would have been better just laying off because by coming out and saying things like that, these people are going to go around there and arm themselves with baseball bats or something as stupid.

"If he just played it cool they'd just lay in front of the bulldozers for a while, get sick of it, and go. When you get the Premier saying things like this you are going to get the conservationists up-tight anyway."

Mr McDermott said Mr Gray was probably reading too much into the situation and the police would rather be left to monitor the situation before deciding on any action.

He confirmed a statement by Mr Gray that the police were preparing a secret strategy to prevent the blockade.

Mr McDermott said: "I think you should take one step at a time and I think most of these people who are concerned about the dam are also pretty responsible.

"Even though the greenies have got a bit of a bad name, I don't think they want to get into brawls.

"For that reason I think that any build-up to some sort of confrontation of this nature is probably doing more harm than good."

CSO: 5000/7563

NEW TECHNIQUE AIDS TRACKING OF INDONESIAN VOLCANIC ASH

Perth THE WEST AUSTRALIAN in English 22 Jul 82 p 3

[Text]

A BREAKTHROUGH by Australian scientists will enable the Indonesian volcanic ash cloud to be tracked for longer.

The ash is difficult to detect on weather satellite photographs once it mixes with the normal cloud.

It can still be dangerous to aircraft in that state.

But, a joint CSIRO and WA Institute of Technology project has designed a technique to isolate the volcanic ash.

The CSIRO team leader, Dr F. Honey, said computer analysis of weather satellite photographs had located the ash.

It had taken two days of intensive work by the teams, he said.

He said the equipment for receiving the satellite information was at the WAIT campus at Bentley and was the only one of its type in Australia.

It has been used in the past 12 months to determine features of the ocean, cloud and land, such as sea temperature, currents, different types of cloud, rock types and forests.

At the request of the Department of Aviation, studies to isolate the volcanic ash cloud were started last week.

The method would be perfected to provide immediate analysis of the satellite photographs when eruptions occurred, Dr Honey said.

Refinement

The Department of Aviation regional director in Perth, Mr E. Kiel, said comprehensive information was provided by the Bureau of Meteorology on the volcanic ash clouds.

This was a refinement of that service, he said.

Two international airliners have been disabled by the ash clouds in the past month.

When the cloud moved across the WA mainland, aircraft were rerouted to avoid it.

The Department of Aviation has sent an officer to Indonesia to help the authorities in their reporting techniques.

CSO: 5000/7562

STRUGGLE TO PRESERVE QUEENSLAND RAINFORESTS REVIEWED

Canberra THE AUSTRALIAN in English 23 Jul 82 p 23

[Text]

OF THE many people and groups who register complaints against the property development industry, one of the most tenacious is the Australian Conservation Foundation.

Through its numerous associate organisations, such as the Queensland Conservation Council, the foundation often faces a tedious legal, and sometimes face-to-face, battle against all those involved in the development sphere — developers, financiers, local authorities and government departments.

Despite the name-calling, "eco-nuts" are working sincerely for the future rather than the present.

A building can quite justifiably — depending on its age and value — be converted into so much rubble and then be replaced.

A rainforest takes a good deal longer to grow — to obliterate such an environmental monument should only be the action of desperate necessity.

Fortunately, Australia does not have the population or the lack of space to have to resort to such action.

Unfortunately, the statistics reveal that, since the ad vent of white settlement in Queensland, more than 60 per cent of the State's rainforests have been destroyed.

The remainder hangs in a very delicate balance that is gradually being outweighed as developers and individual owners, in search of an easy dollar, incessantly gnaw away at the forests.

The Queensland representative of the Australian Conservation Foundation and a rainforest specialist, Mr David Allworth, said the foundation and its associated councils stood at least a chance of saving something if the forests were being attacked in large quantities.

"But these persistent nibbles at the forest can be the real killer," he said.

Destruction

"That sort of action has the insidious characteristics of a cancer, slowly but effectively eating away at the scrap we have left."

The foundation's latest, and most ardent, stand is against the mass destruction of the lowland rainforests of Cow Bay between Daintree River and Cape Tribulation in far northern Queensland.

According to Mr Allworth, the Cape Tribulation and Cow Bay region is the last big rainforest region still standing.

He said the lowland forests were the most diverse and complex growths in the world and to date more than 90 per cent of Queensland's supply had been felled.

Early last year the Cow Bay region was subjected to a sub-division application from a local development firm, Southedge Daintree Pty Ltd, which considered the destruction of almost 1000ha of forest to make way for the production of rural residential allotments.

The responsible local authority, the Douglas Shire Council, had designed a town plan which excluded rural-residential development.

A representative of Southedge, Mr George Quaid, registered an objection to the town plan with the Local Government Department and the plan was subsequently altered and gazetted in June last year.

Mr Allworth said the department agreed with the council's exclusion, but the minister, Mr Russell Hinze, had intervened to reinforce the objection and the result was an insensitive grid pattern development.

Mr Allworth said: "Our most productive line of approach now is to persuade individual owners to preserve their land.

"Unfortunately many of the owners are absentee land holders and appear to be mainly speculators, waiting for the top prices."

"The other problem with the development is that there has been no provision for services, no rubbish dump or recreational facilities and the local council does not have the required funds for water or sewerage, so consumers should be warned.

"But the most frightening aspect is that a minister's intervention is able to override public objection," Mr Allworth said.

Submissions

"The council had originally voiced its bitterness towards the company's objection, but about a month later it was over-ruled and eventually fell into line with the Cabinet directive.

"But even now the council is capable of alleviating the situation by enforcing a more sensitive development as the various approval submissions come up," he said.

The statistics point to a sad future for the State's environment.

Of the State's total 1.7 million sq km area, only 0.6 per cent is rainforest. About 90 per cent of the State is arid to semi-arid country, indicating the need to preserve what growth is there.

In 1980 the Government declared 14,000ha of the Cape Tribulation region a national park, of which only a tiny portion was the valuable lowland forests.

In comparison, the Cape Park is only about twice the size of the Mt Kosciusko National Park — a pitiful effort considering the enormity of Queensland's Cape region.

And although more than half has been lost, about 33 per cent of the remaining lowland forests has been degraded through intensive logging activity.

The Australian Conservation Foundation's national council, based in Melbourne, has registered its opposition to the development proposal with the Queensland Government and has also called on all Queensland shire councils to stop further subdivision of rural residential zoning.

A foundation councillor from northern Queensland, Mr Bill Sokolich, said the Cow Bay area contained one of the last areas of such rainforest in Australia.

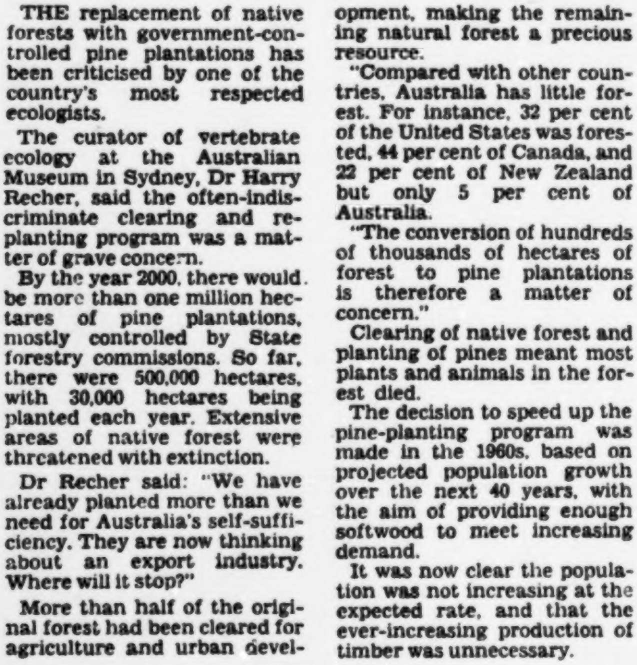
"The local council, under pressure from Russ Hinze, is allowing it to be hacked to pieces as if it had no other value than short-term real estate sales," he said.

CSO: 5000/7562

DESTRUCTION OF NATURAL FOREST FOR GOVERNMENT PLANTING ASSAILED

Canberra THE AUSTRALIAN in English 26 Jul 82 p 3

[Text]



THE replacement of native forests with government-controlled pine plantations has been criticised by one of the country's most respected ecologists.

The curator of vertebrate ecology at the Australian Museum in Sydney, Dr Harry Recher, said the often-indiscriminate clearing and replanting program was a matter of grave concern.

By the year 2000, there would be more than one million hectares of pine plantations, mostly controlled by State forestry commissions. So far, there were 500,000 hectares, with 30,000 hectares being planted each year. Extensive areas of native forest were threatened with extinction.

Dr Recher said: "We have already planted more than we need for Australia's self-sufficiency. They are now thinking about an export industry. Where will it stop?"

More than half of the original forest had been cleared for agriculture and urban development, making the remaining natural forest a precious resource.

"Compared with other countries, Australia has little forest. For instance, 32 per cent of the United States was forested, 44 per cent of Canada, and 22 per cent of New Zealand but only 5 per cent of Australia.

"The conversion of hundreds of thousands of hectares of forest to pine plantations is therefore a matter of concern."

Clearing of native forest and planting of pines meant most plants and animals in the forest died.

The decision to speed up the pine-planting program was made in the 1960s, based on projected population growth over the next 40 years, with the aim of providing enough softwood to meet increasing demand.

It was now clear the population was not increasing at the expected rate, and that the ever-increasing production of timber was unnecessary.

CSO: 5000/7562

PROFESSIONAL GROUPS URGE NSW GOVERNMENT TO SPARE RAINFORESTS

Sydney THE SYDNEY MORNING HERALD in English 2 Aug 82 p 12

[Article by Joseph Glascott]

[Text]

The Joint Professions Standing Committee on the Environment has called on the State Government to preserve all rainforests and buffer forest zones in NSW, "absolutely and without compromise."

The committee represents five influential bodies, the Royal Australian Institute of Architects, the Royal Australian Planning Institute, the Royal Australian Institute of Parks and Recreation, the Australian Institute of Landscape Architects and the Association of Consulting Engineers of Australia.

It has made its views of rainforests known in a submission to the Premier, Mr Wran.

The submission has been made while a State Cabinet sub-committee under the chairmanship of Mr Wran is attempting to formulate a Government policy on rainforests.

The chairman of the Joint Professions Committee and president of the Institute of Landscape Architects, Mr Bruce Mackenzie, said yesterday the committee believed it would not be enough to protect only the pure areas of softwood rainforests, the rainforest as defined by the Forestry Commission.

The adjoining wet sclerophyll eucalypt forests was often inter-related with the rich flora of the rainforest. An attempt to preserve the rainforest while harvesting the marginal rates would be untenable.

The committee's submission said the tropical rainforests of NSW offered an incredible luxuriance of vegetation, emotive images of tropical splendour, a reassuring sense of the perpetuity of nature and sheer exhuberant visual pleasure.

The committee said the Forestry Commission and sawmillers were confident that the logged forests with proper management would in time regenerate and be indistinguishable from the original.

Many other authorities questioned this view.

"They key factor in regeneration is time," the submission says. On the Forestry Commission's own estimates it would take 50 to 70 years for minimum logging conditions to return.

Therefore in the best circumstances a human lifetime would expire and at the beginning of the post-logging state the log forest would be excessively ugly.

For regeneration of the forest to bigger trees, it could take 100 to 250 years.

"It is sobering to realise that the time period since Governor Phillip's arrival in Botany Bay is not yet 200 years — the entire history of British and Australian society on this continent," the submission said.

"The time for rainforest trees to regenerate to genuine maturity cover in many cases is 1,000 years or more.

"The change brought about by logging which bares the structure of the rainforest to light, heat, draught and cold can be initially devastating to the remaining trees."

Mr Mackenzie said the remnant sub-tropical rainforests of eastern Australia were less disturbed than similar forests in South-East Asia and other parts of the world where nomadic peoples have used them for years.

Police arrested 12 protesters for obstruction at a logging operation in the Night Cap Forest near Lismore last Thursday and Friday.

Conservationists have been calling for creation of a national park for 40 years in the Night Cap ranges of Wian Wian State Forest

The deputy director of the Total Environment Centre, Mr Jeff Angel, said yesterday that the arrests were the result of having no rainforest policy in the State.

CSO: 5000/7562

AUSTRALIA

BRIEFS

LOGGING ISSUE--Maroochydore--Conservationists are renewing protests over logging of Conondale Range forests after learning that the Forestry Department knows little about what will happen to the wildlife. The issue has been simmering on the Sunshine Coast since the Conondale Range Committee, an environmental group, sought to save the 5000 ha Booloumba Creek catchment. Logging has already started on two areas in the catchment and the committee now is trying to save about 1000 ha of virgin forest in the Bundaroo Creek section. The Premier, Mr Bjelke-Petersen, has guaranteed that more than 800 ha of the Booloumba Creek catchment will be preserved as a beauty spot and that 50 percent of the Bundaroo area will not be logged until the results of a fauna study, expected to take at least three years, are known. But the committee secretary, Mr Richard Giles said yesterday he was concerned at the department's ability to "recognise wildlife values." Mr Giles said the department admitted knowing little about the effects of Conondale logging on fauna. The Gympie District Forester, Mr Peter Cranny, confirmed this yesterday. He said no area impact study had been conducted and the department's zoologists had not fully investigated environmental effects, if any, caused by logging. Mr Cranny said Conondale logging had been underway since the "turn of the century" without major problems. The department's forest regeneration program was successful and most species appeared not to be harmed. "Obviously, the fauna study could affect the logging path," Mr Cranny said. "If logging is shown to have significant adverse effects on any wildlife, our logging operations will be modified." [Text] [Brisbane THE COURIER-MAIL in English 21 Jul 82 p 13]

SEWERAGE POLLUTION OF RIVER--Effluent from the Horsham Sewerage Authority treatment plant has heavily polluted the Wimmera River, the Environment Protection Appeals Board has ruled. In a report tabled last week, the board directed the authority to stop the discharge of waste water into the river by 31 December 1985. [Text] [Melbourne THE AGE in English 22 Jul 82 p 3]

ANTI-EROSION PROGRAM--Noosa Shire will make a major effort this year to stop serious erosion of its beaches. In adopting a $29 million budget yesterday the shire council agreed that between $700,000 and $750,000 be spent on trying to solve the erosion problem at Noosa Heads and main beach. The shire chairman, Cr Bert Wansley said the aim was to keep sand in the beach area which is continually being washed away. Cr Wansley said it is hoped the work will be completed by Christmas. The project will be funded by the council with a 25 percent State Government subsidy. [Excerpts] [Brisbane THE COURIER-MAIL in English 22 Jul 82 p 2]

BRISBANE PORT DEVELOPMENT--Australia's largest company, BHP has been beaten for control of a vital piece of land at Brisbane's new port by a private company, according to confidential State Government documents revealed yesterday. Release of the documents is certain to create a new political brawl between the State Government and the Port of Brisbane Authority. The documents show that State Cabinet has given precedence to development of a tourist complex, including a marina, over a BHP proposal for a ferromanganese plant. The plant would have created 400 new jobs and caused a substantial increase in port trade. Instead, the land will be developed by Prospect Marine Pty Ltd which will also control a public road and a popular boating passage. Centre of the dispute is an 84.7 ha piece of land on the western side of Fisherman Islands where the $50 million replacement Brisbane port is being developed. The Opposition special projects assistant, Mr Tom Burns, released the documents to the Courier-Mail yesterday. Mr Burns said the documents revealed that State Cabinet had made a scandalous decision. One of the documents shows that the Cabinet on July 15 rescinded a decision it had made two days earlier--thus allowing control of the land to go to Prospect Marine for development as a marina-boatel-tourist complex. The Port of Brisbane Authority supported the BHP proposal. [Excerpt] [Brisbane THE COURIER-MAIL in English 22 Jul 82 p 3]

ANTIHERBICIDE ORDER--A Kwinana factory producing herbicide containing the chemicals 24D and 245T has complied with a Government order to stop discharging liquid waste into an open pit. Chemical Industries (Kwinana) Pty Ltd was given 30 days' notice on June 9 to temporarily inject effluent through a bore into the lower layer of unusable salt-water aquifer while a more satisfactory method of disposal was developed. The order was extended while exploratory bores were monitored at the plant. A spokesman for the Metropolitan Water Board said yesterday that a bore had been completed. [Text] [Perth THE WEST AUSTRALIAN in English 23 Jul 82 p 25]

FODDER-TREE EXPERIMENT--A new project initiated by Department of Agriculture officers at Manjimup will examine the benefits of fodder trees for agricultural production in WA. The Minister for Primary Industry, Mr Old, said yesterday that the aim of the trial was to examine the effect of trees on the health of sheep and on salinity control. The Manjimup district office, with aid and funding from the department's resource-management division, had begun a big-scale tree-planting trial involving 68 hectares on the property of Mr Arthur Ettridge and Sons at Bokerup, about 80km east of Manjimup. The trial site consisted of a significant proportion of a catchment area which had salt areas on the valley floor. Because of the salinity problem, salt-tolerant plants were selected for establishment on the flat. More than 10,000 cuttings of evergreen and deciduous species of tamarisk were planted on mounded rows at 10-metre intervals. The evergreen variety was planted on less saline areas which had supported a sea barley-grass stand and the more salt-tolerant deciduous variety was planted in the salt-scald areas.

Puccinellia and clover species were sown between the mounds. The white-flowering tree lucerne was seeded in double rows one metre apart in belts at 20-metre intervals on the slopes adjoining the flats. [Text] [Perth THE WEST AUSTRALIAN in English 26 Jul 82 p 19]

CATCHMENT CLEARING --Total compensation paid by the State Government to farmers affected by clearing controls in South-West catchments had exceeded $16 million, the Minister for Works and Water Resources, Mr Mensaros said yesterday. Controls over clearing were introduced in 1977 on a number of water-supply catchments and water reserves because the clearing of native vegetation in certain South-West areas had left land and streams salty. Since 1977-78, $8.5m had gone in cash payments to 80 property owners to compensate them for land which they continued to own but were not allowed to clear, he said. A further $7.6m. had been spent in the outright purchase of 47 properties. There was also an active reforestation programme in operation on the Collie River catchment. So far this had involved planting about 19 square kilometres of cleared land with selected eucalypt varieties. The Wellington reservoir which provided water for irrigation and domestic supplies, was located on this catchment. The aim of the reforestation programme was to reverse the problem of increasing stream salinity and improve water quality in the reservoir. [Text] [Perth THE WEST AUSTRALIAN in English 26 Jul 82 p 26]

SMELTER EFFECT ON ENVIRONMENT--Construction work on the Alcoa aluminium smelter at Portland has already taken a heavy toll on native wildlife and vegetation, conservationists claim. The rare Meliblom's spider orchid which is native only to wet heathland in the Portland area is thought to be extinct and the southern-emu wren and native heath rat are also endangered. The former convenor of the South-west Alcoa Action Group, Mr Chris Smyth said the animals were unlikely to survive destruction of their habitat after the heathlands were levelled to begin construction work. "There was talk of transplanting sections of heathland prior to construction, but little appears to have been done," Mr Smyth said. "The heath was burnt and the top soil scraped and deposited at another site in the hope that this would generate new heathland, but it doesn't appear to be working. It's just a harbor for weeds." A Portland field naturalist, Mr Cliff Beauglehole, said 240 species of native flowering plants, including the rare orchid, had been cleared from the Point Danger headland. Although there were plans to raise the orchid from seed, the plant was virtually extinct, he said. "It's hard to imagine where these plants could be re-established. They can't be replanted in national parks because they would be an introduced plant--a foreigner to existing park habitat," he said. Mr Beauglehole said construction work for the smelter had wiped out a unique coastal ecosystem. "There is no way Alcoa should have come here," he said. [Text] [Melbourne THE AGE in English 20 Jul 82 p 7]

CSO: 5000/7563

CHITTAGONG LOGGING, CULTIVATION ADD TO EROSION

Dacca THE BANGLADESH OBSERVER in English 12 Aug 82 p 1

[Article by Syed Murtaza Ali]

[Text] Chittagong, Aug 11--The continued process of indiscriminate logging and thereby shifting of culvitation site on the slopes of the entire belt of the Chittagong Hill Tracts by the local people causes a loss of forest resources worth about Taka 50 lakh a year.

This also contributes to erosion and flash floods. This means of agriculture is locally termed as 'jhoom' cultivation.

The local people cut and burn trees on the slopes in particular to facilitate the cultivation of paddy and other crops. They are nomadic in their attitude in selecting the site of cultivation season-wise.

'Jhoom' cultivation reduces the fertility of the soil in one hand and helps the process of erosion on the other by spoiling soil nutrients.

The retaining of soil in granular condition by plant roots become difficult with the destruction of forests. The plant roots effectively prevent erosion and flash floods as the soil exercises a considerable influence on stream flow. This is one of the reasons that rain waters easily erode uncovered surface soil and reduce the fertility of hilly areas.

There are also cases of logging by unscrupulous persons in the forest areas of Chittagong Hill Tracts. They usually cut the costly varieties of trees and sell them out in black market.

The Forest Department recently introduced a new technique for afforestation of denuded hills of unclassed state forest. About one hundred acres of unclassed state forest were brought under soft food plantation at Tinunia of Jhoom division of Chittagong Hill Tracts. The plant under this technique attained a height of ten inches in ten months.

Experts say that jhoom cultivation should be streamlined to minimise deforestation. The benefit to jhoom cultivators must be ensured but at the same time the adverse effects on forests must be curbed.

CSO: 5000/7084

MONITORING OF INDUSTRIAL EFFLUENTS PROPOSED

Calcutta THE STATESMAN in English 8 Aug 82 p 9

[Text]

DURGAPUR, Aug. 8.—In the "comprehensive pollution survey and studies of the Ganga river basin in West Bengal", recommendations have been made for arranging monitoring of industrial effluent quality, collecting of samples by the State Water Pollution Board and making laboratory examination.

According to another recommendation water hyacinth has the capacity of absorbing certain metallic pollutants and so may be tried in the low cost waste treatment plants. "Initial investigation at the Banaras Hindu University has indicated that the charcoal thrown into the Ganga water from the innumerable burning ghats has the capacity to absorb coliform organisms and arsenic. This accelerates the process of self-purification of the river water. Hence the feasibility of using charcoal in treatment plants may be examined".

The Central Board for the Prevention and Control of Water Pollution has set up a number of sampling stations for "wet" study. They conver the entire length of the Ganga in the plaints, where the responsibility for the collection and analysis of the samples of water every month has been entrusted to the relevant State Prevention and Control of Water Pollution Boards.

In West Bengal, there are nine stations at Farakka, Berhampore, Katwa Nabadwip, Kalyani, Palta, Dakshineswar, Ulubaria and Diamond Harbour where the wet study is continuing round the year. Results of the West Bengal boards water sample analysis indicate that the biochemical oxygen demand in the Bhagirathi segment is below the tolerance limit. In the Hooghly segment the figures are rather confusing.

While Palta's is the highest figure in relation to the biochemical oxygen demand—2.4 and Ulubaria 3.5 the figure for Kalyani is 13.5, Dakshineswar 41.5 and Diamond Harbour 30. The survey mentions about the scope for further improvement in collecting the data.

As the stagnancy of water on farm lands for producing more paddy for transplantation may enhance the pollution of shallow level ground water through increased percolation of dissolved farm chemicals and coliform organism, a few deeper tubewells are to be sunk in the villages exlusively for drinking purposes. Discontinuation of the use of toxic organolorine pesticides has also been recommended to check water pollution.

CSO: 5000/7082

FOREST BOARD ENDORSES PROPOSAL TO REVISE POLICY

Madras THE HINDU in English 9 Aug 82 p 10

[Text] The Central Board of Forestry at its special meeting here yesterday endorsed the Government proposal to revise the national forest policy and the broad framework of the proposed change, aiming at giving the utmost importance to the protection of the existing forests.

According to official sources, the board recognised the need to raise forests in the Government, community, private and public sectors to meet the requirements of fuel, fodder and forest-based industry, consistent with the welfare of the people living in and around the forests.

The basic direction of the policy, however, would be to ensure primarily the preservation of environmental and ecological balance and then only the derivation of economic benefits.

The meeting, presided over by the Union Minister of Agriculture, Rao Birendra Singh, was attended by the Chief Minister of Goa, Daman and Diu and the Forest Ministers of States and Union Territories.

It was convened in the wake of opposition to some of the provisions of the proposed legislation amending the Indian Forest Act, from social scientists on the ground that the tribals who lived on the forest resources would be affected.

Tamil Nadu's Reservations: Mr R.M. Veerappan, Tamil Nadu Minister for Information, Religious Endowments and Forests, has expressed the strong opposition of the State Government to any "divesting" of its authority by the proposed comprehensive Central legislation on forests and wildlife to include these subjects in the Concurrent List.

Mr Veerappan, speaking at the meeting said that Tamil Nadu had stringent laws on the possession and transport of sandalwood and other scheduled timbers. In the absence of similar or comparable legislation in other States, the administration of the Tamil Nadu Act and rules becomes "sub-optimal." "It is in such areas," he said, "that the Central Government would have to resort to its powers to bring about a measure of uniformity in the laws of a State in a particular region."

He suggested to the Central Board of Forestry that a separate department of forestry and environment at the Centre manned by officials and environmental experts should be created. The Forest Service should be made a fully "uniformed service" with legal powers of enforcement at all levels, he said.

Special Interests of States: The Tamil Nadu Minister suggested wattle bark be included under forest produce since it is found in abundance in Tamil Nadu and effectively utilised. The list of scheduled timbers should be made more exhaustive. More stringent punishment for the theft of sandalwood is necessary. "While Tamil Nadu has an effective statutory framework to prevent the theft and illegal possession of sandalwood, our efforts will bear fruit only if the neighbouring States also adopt similar legislation," he said. The State Government has sent its comments on the proposed Indian Forest Act and he was sure that the special interests of each State would be protected in the new act.

Mr Veerappan again urged the Centre to lift the ban on export of sandalwood as the ban had a crippling effect on the State's forest budget.

Centre's 'Threat' to State Officials: The Minister objected to a communication addressed to the Forest Secretaries of the State Governments by the Inspector-General of Forests (Central) "containing a threat that disciplinary proceedings would be taken against the State Government officers if they passed any order involving "disreservation of forests" or transfer of forest lands against the provisions of the Act." "I wish to state," he said, "with all the emphasis at our command that such an open threat to the civil servants in the State, carrying out their duties under the orders of the State Government, is unfortunate. A direction of this nature is designed to cause a rift between the State Government and their civil servants because the civil servants, carrying out the orders of the State Government are sought to be penalised for their action on the basis of interpretation by the Government of India.

Deputations Abroad: Mr Veerappan also objected to the prevailing procedure in the matter of deputing personnel abroad for training and participation in seminars. At present the Centre makes the final selection. "The State Governments are the best judge of who would benefit most by such visits."

Mr Veerappan added there was no need for the monitoring of State working plans on forestry by the Centre. "Apart from the practical difficulty there appears to be no need for such a move since the State Governments have enough expertise and experience to do this job and are better suited for it."

UNI reports:

The Kerala Forests Minister, Mr K.P. Nooruddin, urged the Centre to drop the proposal for centralisation of the working plans of all forest divisions.

He said decentralisation of working of the forestry operations was essential for greater efficiency and best results. It was, therefore, necessary to leave the finalisation of working plans to the State Governments, he said.

CSO: 5000/7083

BRIEFS

ENVIRONMENT COMMISSION REPORT--Wellington (Press Assn)--The Commission for the Environment has disclaimed its role as a rallying point for opposition to specific projects. In its annual report to Parliament yesterday, the commission said its real job was to identify ways to reduce or eliminate the environmental impact of projects and policies. The commission said it was careful in its study of public submissions not to interpret its audit of projects as a form of public opinion survey. "Even if all those making submissions have a clear position against a project, the commission's job is not to draw up a scorecard. The commission's public role is sometimes seen as a rallying point for opposition to a given project or a given policy. This is not the case." An analysis of the public submissions received by the commission also raised the definition of "environmentalist," the report said. In practice, submissions came from a widely representative group of citizens with genuine concern for features of the environment they valued, and from public institutions with statutory or other responsibilities. "These submissions often contain valuable knowledge about the microenvironment of a project which could assist the decisionmaker to choose the best engineering or design option." [Text] [Auckland THE NEW ZEALAND HERALD in English 28 Jul 82 p 5]

CSO: 5200/9076

EDITORIAL ON ENVIRONMENTAL POLLUTION, OUTPUT

HK260856 Beijing RENMIN RIBAO in Chinese 22 Aug 82 p 1

[Editorial: "Closely Combine Environmental Protection With Production Development"]

[Text] A good living environment and natural surroundings are signs denoting a country strong and prosperous, a happy life for the people and social civilization. After nearly 10 years of efforts, and in particular, since the 3d Plenary Session of the 11th CPC Central Committee, great achievements have been made in environmental protection. However, due to the long-term incorrect understanding of the importance of environmental protection, we never took this into consideration when conducting industrial production and construction. Most of the factories have not adopted technical preventive measures against pollution. As a result, environmental pollution and the destruction of living things have reached an acute stage. This should arouse our close attention.

While developing production, we should pay attention to environmental protection. We can develop production by doing a good job in environmental protection. It is wrong to only take present production needs into account by disregarding the pollution and destruction of the environment and developing production at the expense of the environment. We should consider both production and living things and we should closely combine environmental protection with production development.

Industrial pollution must be dealt with. However, at present, due to financial difficulty, the state cannot allocate large funds for this purpose. To prevent pollution, we should proceed in all cases from the national situation, and persist in the policy of self-reliance and the principle that those who contaminate the environment will bear the responsibility of handling the pollution. We should principally rely on the forces of the industrial departments and enterprises, and exploit their potential so that they can resolve the pollution problem themselves. It is not necessary to spend a lot of money on the pollution problem so long as we can take preventive measures earlier. But it will cost even more money and the problem will be more complicated if we delay in solving the pollution problem. One of the main reasons for industrial and enterprise pollution resides in enterprise maladministration.

Enterprise readjustment should include the following measures: strengthening environmental administration and control pollution. This is an important sign for inspecting the results of readjustment. Environmental administration should be a link in the chain of enterprise management and the production process. We should do a good job in environmental protection while we are carrying out industrial production. It is necessary to establish corresponding organs to take charge of environmental protection, set up economic responsibility systems, implement responsibility systems for managers and chief engineers who take charge of the environmental protection of the enterprise, explicitly stipulate the economic responsibility for environmental protection which the enterprises bear for society and the staff and workers for the enterprises, link responsibility, rights and interests with the environmental impact of the enterprises, and decide on awards through points and discussion based on production and economic results.

In China, most of the enterprises have outdated technology and equipment, which causes high consumption of resources and energy and various forms of waste. To carry out technical reform in the existing industries and enterprises constitutes an important policy for national economic construction, and is also an effective way to deal with industrial pollution. All enterprises and departments responsible for the work must strive to prevent pollution by taking this as an important goal in achieving technical reform. They must actively make efforts to solve the pollution problem by reforming technology and renewing equipment. They must raise efficiency while making use of resources and energy and convert them to produce to the maximum. They must pay special attention to raising the level of comprehensive utilization, adopt recycling measures, break down the boundaries between enterprises, practice indiscriminating application among factories and salvage useful materials from the three wastes (waste gas, wastewater and industrial residue). They should carefully ensure that the three wastes are technologically exhausted, and meet the state's exhaust standards.

Many areas of the country are seriously polluted and this is mainly due to irrational industrial planning. While carrying out industrial readjustment and reform, industrial plans should be correctly arranged according to general urban plans. Construction of all factories and enterprises should be based on urban characteristics, correspond to urban development, and be limited by the urban environmental conditions. We should strictly carry out the measures for protecting the environment; these measures should be simultaneously designed, built and put into operation together with any key projects. It is forbidden to indiscriminately build or rebuild and extend a factory. In the future, enterprises and institutions that pollute the environment may not be built in densely populated areas and in the protected areas of river headwaters as well as in scenic and sightseeing spots. Some enterprises, which are irrationally planned, seriously pollute the environment or are difficult to deal with, must be resolutely closed or moved out according to specific conditions. In reorganizing industry along specialized lines, we should gradually set up specialized cooperative centers for the different trades. We should concentrate the separate factories which pollute their surroundings in order to centralize management of the "three wastes" and to raise productivity. Urban factories are absolutely not allowed to shift pollution-causing production to the commune and brigade enterprises, which lack preventive measures against pollution.

The prevention of industrial pollution, and the protection and improvement of the environment, are closely related to all economic fields as well as all industrial departments. Governments at all levels should put this matter on the agenda and strengthen leadership over it. All departments concerned should take concerted action, go deep into the realities of life, make investigations, sum up experiences, make overall planning, coordination and supervision, and help enterprises solve the problem of environmental pollution through various means.

To protect and improve the environment is an important task for developing the national economy and society. It is a component part in creating material civilization and socialist spiritual civilization. We should resolutely adhere to the decrees and stipulation of the state, go into action, promote prevention work concerning pollution, rapidly reverse the serious trend of industrial pollution and strive to achieve coordinated development in industrial construction and environmental protection.

CSO: 5000/2160

PHILIPPINES

CRISIS SITUATION GRIPS COASTAL WATERS ECOSYSTEM

Cebu City VISAYAN HERALD in English 3 Aug 82 pp 3, 4

[Article by Feliciano H. Magno]

[Text]

Manila (Depthnews) — Marine productivity of the country's near-shore coastal waters is now in crisis situation because of unabated destruction of the supporting ecological system.

Some parts of the coastal waters have become virtually devoid of marine life, and the day is not far off when the other parts will meet the same fate, warned two aquaculture experts of SEAFDEC.

SEAFDEC translates into the Southeast Asia Fisheries Development Center. It is based in Tigbuan, Iloilo, and was set up to help nations in the region improve their fishery industry.

In a paper presented to the recently held national conference on natural resources conservation, Flor Lacanilao and Adam Young called for proper management of the country's coastal zone resources on a crash basis.

They drew attention to the fact that environmental degradation continues to erode the productivity of the near-shore waters.

The experts cited two management options to arrest the crisis:

- Imposition and enforcement of mandatory restrictions on municipal and commercial fishing through minimum mesh (net) size regulations, closed seasons, catch quotas and fishing area restrictions.
- Reducing the fishing pressure on the coastal waters by developing alternative means of livelihood for municipal fishermen such as captive fisheries in the form of mariculture and seafarming.

Ms. Lacanilao and Mr. Young attributed the destruction of the coastal waters' ecological support system to "irrational utilization of mangrove forest deforestation of watersheds, mining and disposal of mine tailings, reclamation projects, industrial and domestic pollution, and other human activities related to economic progress and human settlements."

They stressed that dwindling productivity of the coastal waters comes at a time when the country is embarked on a campaign to raise domestic fish production to attain self-sufficiency.

Citing latest statistics from the fisheries bureau, the experts said Philippine fish production in 1980 totaled 1,672,000 metric tons or 5.7 percent more than the 1979 national catch. However, the 1980 outturn was 58,000 metric tons below the projected effective domestic demand and 77,000 tons short of the target production.

Mangrove swamp forests, coral reefs and estuaries and bays make up the ecosystem of the coastal waters. The system has taken a terrific beating through the years and continues to do so, reported the experts.

Mangrove forests measured from 400,000 to half a million hectares in 1920.

CSO: 5000/5803

REPORTAGE ON PROTECTED WILDLIFE AREAS IN COUNTRY

Havana BOHEMIA in Spanish 23 Jul 82 pp 90-91

[Article by Alfredo Nieto Dopico from science and technology section of BOHEMIA, "Panorama," editor H. Nunez Lemus]

[Text] Nature conservation is a system composed of social, socioeconomic and technico-production measures implemented within the limits of a nation or on an international scale and which are aimed at sensible utilization of typical or rare natural resources or those that are becoming extinct as well as at protection of the environment against destruction and pollution.

Therefore, conserving natural resources does not mean ceasing to use them, but organizing their judicious utilization so that they are not exhausted and are used in a perfectly sensible and efficient way.

It has been since the revolutionary victory that the indispensable socioeconomic premises have been produced in Cuba for the new state, representative of the interests of the entire society, to tackle the tasks of nature conservation as part of the gigantic effort that is being made throughout the country on behalf of development.

All ecological factors constitute the environment and these are in turn subdivided into abiotic and biotic factors, the former including climate, soils, relief features, water and others, while the latter correspond to living beings and include human activity.

Protected Areas

In the context of the specific measures that have been and are being adopted in Cuba in favor of the conservation of flora and fauna, conspicuous is the development of protected areas, among whose fundamental objectives are to keep intact specimens of original natural phenomena and to preserve our ecosystems, which will in turn serve as instruments for scientific research and environmental education.

Because of the goal we are pursuing and the means by which we will achieve it, environmental protection is a social activity, since its objective is to protect man, which at the same time requires his active participation as a chief element in the process.

Without an aware society which loves its environment, we cannot succeed in achieving a harmonic, varied and protected natural environment.

The necessary stock-taking of the natural environment has been going on in Cuba, especially these past few years, since it is not hard to see that a movement is being created that is of interest to more and more people.

Doctor of Biological Sciences Abelardo Moreno Bonilla, the chairman of the National Council for the Conservation of Flora and Fauna, explained to us the reasons behind this movement, which are chiefly the result of the efforts being made by the committees that have been created in all the provinces and in the special municipality of Isle of Youth as well as in other municipalities.

"These committees, in which the People's Government, associated administrative institutions and political and mass organizations participate, were created on the initiative of Commander of the Revolution, Comrade Guillermo Garcia Frias, who is at present serving with the Cuban Academy of Sciences," Dr Moreno informed us. They are of great importance since they constitute the link between the masses and the state scientific and administrative institutions which are responsible for keeping watch over conservation of the country's flora and fauna.

"The proposals as to the areas to be protected have come from these work committees, which are trying to develop them making maximum use of local human and material resources. They also conduct research, scientific studies and environmental education campaigns. In some provinces, like Villa Clara, they have organized students into special interest clubs relating to nature conservation tasks."

Abelardo Moreno accords special importance to the Environmental Conservation Law promulgated by the National Assembly of the People's Government, on the basis of which other complementary laws are being drafted.

The protected areas that are being developed are not all at the same level of development. We must also make it clear that even those that appear to be most advanced are still under study. Their characteristics are being studied and they are working on the compilation of their inventories of flora and fauna, among other things.

However, the preliminary features that gave rise to the proposals for these areas permit us to assert that they are regions of great scientific interest which, because of their value to the ecology, it is advisable to preserve and develop in accordance with the characteristics of each of them, which usually differ among them.

Gene Reserve

There are several individual sciences which converge in studies dealing with the conservation of flora and fauna in this more than fascinating, complex world. One of the objectives which the scientific and social institutions concerned with this field are universally striving to achieve is the maintenance at any cost of a reserve of genes of all biotic species in order to guarantee their inevitable evolution, which will run its course over thousands and millions of years, according to the theory proven by the learned English naturalist, Charles Robert Darwin (1809-1882).

The ability of each species to adapt itself to new conditions in its habitat is contained in its genetic reserves. Each living being exhibits its own characteristics, but these are a small part of those present in its /genotype/ [in boldface], that is, in its /chromosomes/ [in boldface].

Those species that have adapted to the prevailing conditions can survive, but sometimes, whether due to natural phenomena or the direct action of man, these conditions change suddenly or over relatively brief periods of time. Thus those that have already adapted to them cease to do so and only those survive which possess genes in their reserves capable of providing them with other characteristics that will enable them to adapt themselves to the new conditions.

We therefore deduce the fact that the more numerous a population is, the greater will be the stock of genes it is endowed with, thus increasing its potential for survival in the face of unexpected changes in its natural environment.

While often predictable thanks to the scientific advances made by mankind, as a general rule natural phenomena cannot be avoided, but the action of man can be directed in favor of or to the detriment of survival of the species, which is why this point is of primary importance where conservation of the environment is concerned.

Endemism in Cuba

Endemism is one of the traits that is characteristic of Cuban flora and fauna. Over the centuries millions of species have ceased to exist on this planet for one reason or another. Our little country has been no exception to this catastrophe and, whether they may have been migratory or native, many of those life forms that once inhabited our beautiful countryside are now gone.

To cite merely one example, today we lament the loss of the guacamayo (Ara tricolor). This bird with a beautiful, multicolored plumage inhabited our then virgin forests in the 15th century.

This bird disappeared in the middle of the last century due to the destruction of the great forests and the indiscriminate hunting to which it was subjected, chiefly to use its feathers for custom-made clothing. Today we have only a stuffed specimen in the fauna-filled depths of the Institute of Zoology of the Cuban Academy of Sciences that dates from 150 years back and is considered to be the only one of its kind in the world.

At the present time 10 species of Cuban birds appear in "The Red Book of Endangered Animals" and 32 must be considered to be seriously threatened.

The royal carpenter (Campephilus principalis) figures among these birds. It is an extremely rare native subspecies which is only found in some wooded regions in the eastern provinces. In 1968 its presence was reported 7 km north of Cupeyal, Camino de Moa.

Our country does not have many wild mammals, either terrestrial or aquatic, but they are, nevertheless, of scientific interest because most of them are species in danger of extinction, as is the well-known almiqui (Soledon cubanus). The hutias are the most typical mammals in Cuba. They belong to the order of Rodentia, of which eight living species have been identified in Cuba. Then there is the manatee or sea cow, Trichechus manatus, whose presence at several points on the coasts of Cuba, where the chief rivers empty into the sea, is getting scarcer and scarcer.

There are other very important species of wild mammals, as is the case with the deer, Odocollus virginianus, which is the most beautiful of all. And not to leave them unmentioned, we can also list the wild pig, the wild boar (Sus scrofa) and the wild horse (Equus caballus), native to Cayo Romano.

Many native species of plants are also located in the protected areas. By way of illustration, let us cite among them the Trichilla pungens, native to Bahia Naranjo Holguin, the only place in the world where there are still many specimens.

The guana, Hildegardia cubinsis, is found in Najasa, Camaguey. The cork palm, microcycar calocama, considered to be one of the oldest species of our flora, is native to Mil Cumbres, Pinar del Rio.

Also well-represented in the areas referred to are the different kinds of woodlands that exist in Cuba, valuable natural resources which it is our duty to preserve, the most noteworthy of which are: Semicaducifolia forest on limestone soil at Guanahacabibes and the same kind, but on acid soil, on mountain tops; xerophilous forest at Desembarco del Granma; and poorly drained Semicaducifolia forest, as well as the Manglares forest which is the biggest in the country and perhaps the world, is found on the peninsula of Zapata.

Conclusions

The results that have so far been obtained in Cuba in the field of environmental protection are encouraging, especially if we start with the fact that the most important element resides in the conditions that have been created with an eye to the later development of this noble undertaking in which the masses, which are also forging their own future in this, are playing an ever more prominent role.

We are certain that the day is not far off when our beautiful Antillean islands will all be part of an environmental protection area.

11,466
CSO: 5000/2154

BRIEFS

FISHING WITH CHEMICALS--FISHERMEN around the Afram Lake in Kwahu in the Eastern Region have been warned not to use poisonous chemicals in fishing in the lake. People's Defence Committees in towns and villages along the lake have been directed to keep surveillance and report anyone caught indulging in such dangerous practice. Mr Yeboah Kwame, interim district co-ordinator for PDC's in Kwahu, gave the warning following numerous complaints at a meeting with fishermen and PDCs' from eight fishing towns near Kotoso-Kwahu on Tuesday. Mr Yeboah regretted that the lake which serves as the only source of drinking water in the area should be polluted with dangerous chemicals. He said the practice was dangerous to human health. Mr Yeboah advised the fishermen to organize themselves into co-operative groups so that they could get fishing materials at the control prices. [Excerpt] [Accra GHANAIAN TIMES in English 6 Aug 82 p 5]

CSO: 5000/5812

BRIEFS

MYSTERY OIL SPILL--CAPE TOWN--About 150 penguins have fallen victim to a mystery oil spill somewhere near Cape Agulhas. The oiled birds started coming ashore on Dyer Island off Cape Agulhas on Tuesday, according to a spokesman for the Marine development branch of the department of the environment. The arrival of the birds was reported by a Marine Development Branch employee stationed on the island and a boat was sent to pick them up. However, rough seas whipped up by a strong south-easterly wind created serious difficulties for rescue operations and only about half of the affected birds were picked up. The 53 oiled penguins picked up from the island on Tuesday were taken to the rescue station of the South African National Foundation for the Conservation of Coastal Birds in Wetton. After a 24-hour delay in the rescue operation caused by the high winds, another 90 oil-soaked penguins were picked up and transported to the rescue station. Cleaning and feeding of the stricken birds began shortly after their arrival at the station at noon on Thursday. Mrs Althea Westphal, vice-chairman of SANCCOB, said it was difficult at this stage to determine how many of the oiled penguins would survive. By late Thursday afternoon none of the penguins in the first group had died and all had been cleaned at least once. "We don't know which birds have ingested oil and which have not, although quite a few had oil on their bills when they came in. It could be fatal for those which have swallowed oil," she said. [Text] [Johannesburg THE CITIZEN in English 28 Aug 82 p 13]

DUNSWART POLLUTION CONTROLS--BENONI can look forward to the promise of clearer skies following the recent installation and commissioning of major extensions to the gas cleaning plant at Dunswart Iron and Steel's factory, which is located near the town. The extensions, designed and installed by Brandt Engineering--specialists in air pollution control technology--represent the third stage in a major clean-up programme Dunswart embarked upon almost three years ago. This latest stage is aimed at cleaning the off-gases produced by the steel plant's "C" furnace and is worth more than R1-million to Brandt Engineering, which was involved with the design and installation of the other two stages of the now completed fume extraction plant. The plant is designed to eliminate all visible stack emissions, and is expected to collect more than 34 tons of dust each day. The technology incorporates a design using a reverse air cleaning system, in which the furnace gas is cooled down from more than 1 000°C to about 130°C, and passed through large bag filters before being discharged into the atmosphere. [Text] [Johannesburg THE CITIZEN in English 23 Aug 82 p 27]

CSO: 5000/5813

USSR

UDC 581.522.4

EFFECT OF HUMAN ACTIVITY ON ECOLOGICAL AND PHYSIOLOGICAL FEATURES OF ALPINE PLANTS

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR Vol 105, No 1, Jan 82 pp 121-124

[Article by G. Sh. Nakhutsrichvili, corresponding member of the GSSR Academy of Sciences, L. D. Khetsuriani, and N. I. Tulashvili, Academy of Sciences of the Georgian SSR, Institute of Botany, manuscript received 30 April 1981]

[Text] The effect on the ecosystems of human activity significantly modifies not only their structure, but also the functional features of individual plant species.

As a result of many years of use of the mountainous meadows of Central Caucasus as pastures, the vertical structure of phytocenoses has almost been completely reduced, the quantity of biomass and the plant surface index have considerably diminished, aerodynamic processes have intensified, the flow of thermal energy in the soil has increased, the erectophilic orientation of the leaves towards the substrate surface has become plagiophilic, and the diffusion resistance of the leaves has drastically diminished [1,2].

Studies on the effect of grazing on the ecological-physiological features (photosynthesis, water regime) of Alpine plants were made by us in 1977-1979 in the subalpine zone of Central Caucasus. Observation objects were two sections of one plant association Bromus variegatus--Agrostis planifolia--Trifolium ambiguum which is represented on the plateau of Elia Mountain (2050 m below sea level, Kazbegi). One of these sections was a preserve, while the second had been grazed by sheep for many years. Observations were made of three characteristic species for this association: Alchemilla retinervis, Trifolium ambiguumi and Plantago caucasica.

Comparative phenometric observations of the cenopopulations of these species indicated that under preserve conditions the leaves of these plants were double in size as compared to the pasture. The ecotype of both sections in relation to moisture was almost identical, with low strain of the water balance.

The intensity of photosynthesis was measured by conductometric instrument of V. L. Voznesenskiy. The diffusion resistance was analyzed by diffusion porometer [2], the water potential was determined by the method of V. S. Shardakov, and the water deficit by the method of O. Chatskiy.

One should primarily note that the three species we studied, and especially Trifolium ambiguum have fairly high indicators of photosynthetic intensity on both sections (up to 40 mg of CO_2 per gram of dry weight per hour). Almost synchronous observations of the intensity of photosynthesis of plant species of the same name under two conditions which vary in the nature of use established that the difference between the cenopopulations is fairly sharp (table). On the grazed meadow, the maximum intensity of photosynthesis was almost 8 mg of CO_2 more than in the preserve. The difference between the average annual indicators of this process is somewhat lower.

Ecological-Physiological Indicators of Plants on Grazed (1) and Preserve (2) Meadows

Indicators		Alchemilla retinervis		Trifolium ambiguum		Plantago caucasica	
		1	2	1	2	1	2
Intensity of photosynthesis mg x CO_2/g^{-1} x h^{-1}	Maximum	37,0	29,0	40,0	34,8	37,8	30,2
	Average	22,7	17,0	26,2	19,8	21,8	15,7
Intensity of transpiration g x cm_2/g^{-2} x min^{-1}	Maximum	6,7	4,4	—	—	8,4	7,5
	Average	3,7	2,5	—	—	5,3	3,8
Water deficit,%	Maximum	18,9	12,9	25.2	21.1	21,6	18,0
	Average	12,5	10,2	15.5	12.1	12,5	10,0
Water potential, cm/sec	Average	11.2	9,4	11,2	9.9	9,9	8,6
Diffusion resistance of stoma,bar	Maximum	1,56	1,20	—	—	2,65	2,26

The curves for the diurnal changes in photosynthetic intensity in the populations of one plant species under different conditions of meadow use have different types of curves. Thus, for example, as is apparent from fig. 1, the curve for the diurnal course of photosynthesis of Alchemilla retinervis on the pasture has a flatter apex than on the preserve meadow. The maximum intensity of photosynthesis on the pasture occurs already at 09.00 and continues up to 13.00 almost with the same intensity. In the preserve, the maximum of this process occurs at 11.00, but within an hour it diminishes somewhat. The difference between the quantities of photosynthetic intensity appears especially sharply from 09.00-10.00 to 14.00-15.00.

Thus, the intensity of the observed photosynthesis of plants species of the same name on the pasture is considerably higher than under the preserve regime. One should explain this law by the change as a result of alienation of the herbage of the plant growth form towards plagiophily and increase in the possibility of PAR [photosynthetically active radiation] absorption.

Study of the water regime of plants indicated that the difference between species of the same name for this parameter is also clearly pronounced, as with photosynthetic intensity. The plants which developed on the pasture

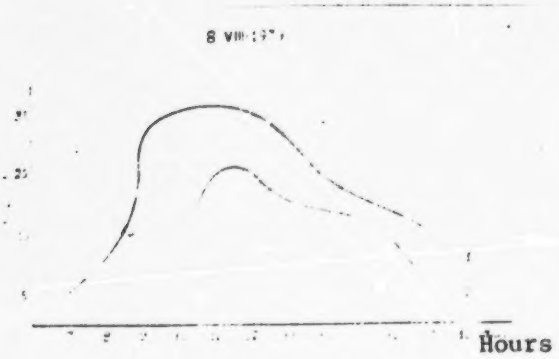


Figure 1. Diurnal Dynamics for Intensity of Photosynthesis of Alchemilla retinervis on Grazed (1) and Preserve (2) Meadow

in contrast to the cenopopulations of the preserve, have a comparatively low water potential, high water deficit in the leaves and increased transpiration intensity. Of especial interest are studies of the diffusion resistance of the stomata with the help of a porometer [2]. It was found that the stomal limitation of transpiration is expressed more clearly in the preserve conditions. On the pasture, the plants have low diffusion resistance of the stomata and greater capacity for conducting water (table). It is also important to note that of the species we studied, Plantago caucasica differs from all the studied (according to the given technique) of Alpine plants because of the highest capacity for conducting water.

It should be noted in conclusion that the comparatively low water potential of plants on the pasture land is a result of the increase in water exchange per unit of leaf surface as needed. The reason for this law is the low diffusion and aerodynamic resistances of the leaves of the herbaceous dicotyledonous plants [2]. One should also hypothesize that under anthropogenic conditions the increased water loss by the plants is one of the reasons for the increased photosynthetic intensity.

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9035
CSO: 5000/15

USSR

UDC 578.087 1

EXPERIMENTAL CONSTRUCTION OF A SYSTEM FOR BIOINDICATION OF THE WASTE WATER PURIFICATION PROCESS

Moscow BIOLOGICHESKIYE NAUKI in Russian Vol 219, No 3, Mar 82 p 110

[Article by V. N. Nosov, O. G. Nikitina and V. N. Maksimov, manuscript deposited in the All-Union Institute of Scientific and Technical Information No 543a-80 Dep]

[Text] This work covers the many years of experience using biological indication of disorders in waste water purification that was accumulated at the Zelenograd aeration plant. As a result of the statistical analysis, a system was formulated which made it possible to use the population of a number of organisms of the active silt to evaluate the course of purification and to reveal the reasons for the detected disorders. This system makes it possible to analyze the process of purification and to make the necessary recommendations for control during one working day. The basic indicators of the system are quantitatively defined. The system has a digital nature, and the necessary calculations are elementary.

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9035
CSO: 5000/14

INCECTICIDES FOUND DANGEROUS, MULTINATIONALS BLAMED

Athens TA NEA in Greek 19 Aug 82 p 12

[Text] The multinationals until now considered Greece an unfenced vineyard and, as a consequence, pesticides, banned as unfit in the countries where they were made, were put in use either illegally or even legally with the mere formality of just a check of certain certificates of origin.

This was denounced yesterday in a communique' of the Panhellenic Union of Agronomist Civil Servants (PEGDY), while, as of yesterday, on Mr. Th. Pangalos' deputy minister of Commerce orders, the Market Inspectorate services began confiscating illegal pesticides.

PEGDY in its communique' emphasizes that:

The many insecticides and weedkillers used by our growers are often dispensed by individuals who do not have the proper qualifications.

From the scientific point of view, the fact that there is not sufficient knowledge on the long-term effects of insecticides on the health of those who use them, the consumers who necessarily come into contact with them as well as to the effects on the fauna and flora of land and sea ecosystems, should be considered.

The agronomists propose:

To intensify the control and to extend it to the agricultural poisons used by farmers.

The dispensing of agricultural poisons be made exclusively and only by specialized agronomists.

The Ministry of Commerce is warning consumers that the insecticides which are sold illegally and which the public not only should not use, but should alert police authorities are:

BAYGON SPRAY (green), VETO, mothkiller, SHELTOX flykiller, NEOCID, NEPIN SUPER COMET, PTHEIREX, licekiller,FUZI MAT, PTHEIROXYL, MOON FLOWER, MOTHPROOFER, DELO mothkiller, KRIALLIS, SHELTOX red, OKO SPRAY, RABAK MAT, MOSQUITO COLIS centaur, MOTHKILLER ARISTON, TOXION SOS, PEACOCK, ANTISCOR, EMOTOX, SCOT, JET AEROSOL, SPIRAL KILL ALL, DAKOR MAT NEO VETO, various napthalines, PARASINE, SCOR AND, MOTHAKS, CORDE REPULSIVE NICE SMELL, SKOROTOX paraffin candle.

It should be noted that, as regards the BAYGON the Consumers Union has reported it to Conumers International.

9731
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27 September 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 370

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 370

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LAW ON ENVIRONMENTAL MANAGEMENT TAKES EFFECT

Jakarta HARIAN UMUM AB in Indonesian 17 Jul 82 p 4

[Excerpts] Destroyers of the environment, beware! Intentionally damaging or polluting the environment is a felony, punishable by up to 10 years in prison, and/or a fine of 100 million rupiahs.

Damaging or polluting the environment through negligence is a misdemeanor, which could mean a year in prison and/or a fine of 1 million rupiahs.

These provisions are part of the Law on Environmental Management, which took effect on 11 March 1982.

On the national level, Indonesia has taken two significant steps since 1978. In 1978, President Soeharto established the office of Minister of State for Development and Environmental Control. Before that, environmental problems were handled at the sub-ministerial level, at second and third echelon. Now, there is a member of the cabinet who is responsible for coordinating projects which relate to environmental problems.

At the end of February 1982, Parliament passed draft legislation concerning the environment. President Soeharto signed them less than two weeks later.

The new law has five points: principles and objectives; measures for dealing with those who destroy or pollute the environment; management of the environment; responsibilities for protecting and managing the environment; and the aspects of benefit to international life.

Minister of State for Development and Environmental Control Emil Salim said the regulations which he will enforce stress matters which will support and accelerate development.

This law outlines the rights and responsibilities of evervone involved in managing the environment. Also, every businessman must insure continued environmental balance and harmony in carrying out development.

One article of the law calls for people's self-help institutions to take an active part in managing the environment.

Twenty such institutions (formerly known as non-government organizations) which constitute the (Wahana) Indonesian Environment, made suggestions to a special Parliamentary committee which was studying the law when it was still in draft form.

Erna Witoelar, secretary of Wahana, at first criticized the failure to clarify procedures for compelling polluters to compensate victims. The chairman of the special committee said he hoped the government would promulgate regulations to deal with this problem.

"Hopefully, the new law will serve as an umbrella for all kinds of environmental legislation," said Imam Soedarwo, chairman of the committee.

Indonesia has three laws dealing with natural resources: the agrarian law of 1960; the forestry law of 1967; and the mining law of 1967. But these laws often cause disputes between government departments responsible for administering the respective laws.

The agrarian law is administered by the Department of Home Affairs; the forestry law by the Department of Agriculture; and the mining law by the Department of Mining and Energy.

As a result, conflicts of interest hamper enforcement of the laws. Forestry is a good example. Indonesia has 122.2 million hectares of various types of forest. This is larger than the combined areas of Burma, Bhutan, Thailand and Taiwan. The extent of Indonesia's forested areas causes problems in supervising unauthorized woodcutting.

Another major problem is the right of logging companies to work land earmarked for mining or residential use. Such cases are encountered in Sumatra and Kalimantan.

The problems faced by the three laws may complicate government efforts to enforce the new environmental law. But there is one advantage in the new law. It is concise, clear, and easy to understand. This is a departure from the complicated language often found in laws.

The law's drafters consulted experts from the Center for Construction and Development Language of the Department of Education and Culture. The intent was that the law could be easily understood, and could be disseminated as widely as possible. President Soeharto particularly wanted this done. The law is a simple but firm declaration: "Everyone has the right to a safe and healthy environment."

9197
CSO: 5000/8014

BRIEFS

PROTECTION OF ENVIRONMENT--A draft ordinance is being prepared for the protection of environment, with particular reference to Karachi. It would eventually be applicable to the whole of Sind. The proposed ordinance is part of the measures being taken by the Karachi Development Authority for effective environmental control in Karachi. Other measures include improving sanitary conditions in the low-income areas and to design and develop low-cost waste water treatment system in new human settlement shcemes of KDA. Official sources told PPI on Friday that urbanisation in Karachi was aggravating pollution problems. Moreover, there was a lack of accurate information and data to ascertain the true dimensions of pollution problems in Karachi. But whatever Information was available from the studies conducted, clearly indicated that Karachi was at the threshold of an urban crisis, the sources said. To check air pollution, caused by vehicles, all operators of smoke-emitting vehicles had been advised to get their vehicles repaired. Strict action had been envisaged against the operators of somke-emitting vehicles. The source said various industries, causing air pollution, had been advised to take remedial measures in this regard. Legislation was being made against oil spills by Ships in Karachi harbour. Studies were also being undertaken to control marine pollution, the sources added. [Karachi DAWN in English 21 Aug 82 p 8]

CSO: 5000/5814

BRIEFS

PESTICIDES POISONING--More than a million people in Thailand are suffering from one form or another of poisoning caused by unregulated use of pesticides, Dr Prayun Dima, head of the division of toxic substances, Ministry of Agriculture, said yesterday. He said he believed that even that figure was low because more than 30 million Thais were involved in agriculture and farmers tended to shower their crops with pesticides without wearing protective clothing or using other forms of protection. The poisons affect the farmers more than the people who eventually consume them through grains, fruits and vegetables, Dr Prayun said. Many of them suffer from respiratory and abdominal diseases as a result. Some die. [Excerpt] [Bangkok BANGKOK POST in English 5 Jun 82 p 20 BK]

CSO: 5000/5818

BRIEFS

BEACH EROSION--A glaring example of what can happen when man interferes with the natural processes of the environment can be found at the Crane Beach in St Philip. This beach, once a haven for picnickers and other funlovers is now in a state of total collapse. And why? Well, according to the evidence in findings by a beach morphologist who was investigating ways in which the erosion problem could be tackled, it all started following the building of the road leading down to the beach. There was a time when people could walk from the centuries-old Crane Beach Hotel for miles along the white sand. Now, this cannot be done since the water's edge reaches as far as the road, part of which has been broken as a result of the action by the sea. One visitor who has been coming here for six years as a guest of the Crane Beach Hotel said that it was felt that the pool of another hotel property about half mile from the Crane Beach would soon disappear. [Text] [Bridgetown ADVOCATE-NEWS in English 18 Aug 82 p 9]

CSO: 5000/7565

BERMUDA

GOVERNMENT MOVES TO PROBE CRUISE SHIP SOOT POLLUTION

Hamilton THE ROYAL GAZETTE in English 11 Aug 82 p 1

[Text]

Department of Agriculture and Fisheries officers plan to investigate complaints of air pollution in St. George's following allegations of soot emissions from the cruise ship Volendam.

Dr. Idwal Hughes, Department director, confirmed yesterday that the classic symptom of air pollution — sulphur dioxide — had been found on plants in the Bridge House Art and Craft Shop in King's Square, close to the Volendam's Ordnance Island dock.

"We will have a look round the general area of St. George's and see whether the problem is localised or more widespread," said Dr. Hughes.

Although tests on the King's Square shop's plants showed traces of soot, Dr. Hughes could not confirm that the Volendam was the source of the pollution.

"We cannot say where the pollution came from," he said. "It appears to be an acute, one-shot deal and there is no chronic problem. It could be soot or it could be vapour levels."

Dr. Hughes added that it would be "wrong to jump to conclusions" over pollution dangers to water supplies.

"If you get acid rain it could affect, it but the dilution is huge. What effect these random occurrences have would be slight if any at all.

"Plants are particularly sensitive. They require certain conditions and if the levels of sulphur are higher than they are comfortable with, then they exhibit symptoms."

Emissions from the cruise ship have been a long-standing beef for St. George's residents who have regularly complained that their homes and businesses have been smothered with black soot.

Earlier this week some residents aired fears that the soot may have settled in their water tanks and Mrs. Jill Raine, who runs the Bridge House Art and Craft Shop, called in officials to examine plants discoloured by soot.

CSO: 5000/7565

CONCERN OVER POLLUTION OF SAN PEDRO RIVER

Quito EL COMERCIO in Spanish 20 Aug 82 p A 10

[Article: "The San Pedro River is Polluted"]

[Text] Inhabitants of the town of San Rafael have reported that the San Pedro River, which surrounds the sector, is polluted with the refuse that is dumped daily by the municipal garbage trucks from the Quito canton as much as from the Ruminahui canton.

Seriously worried by the proliferation of rats, flies and mosquitos, several citizens have complained to the Eundacion Natura.

They say that in the last 4 years the refuse collection and disposal companies of these two cantons, which serve the surrounding sectors of San Rafael, Sangolqui and Conocoto, have dumped into the almost dry bed of the San Pedro River tons of rubbish, whose decay is seriously endangering the health of the residents of this beautiful zone, which is considered the satellite citadel of the capital.

The problem of pollution is so much greater when it has resulted in a health threat for the "garbage pickers," persons of meager resources who, in their search for useful items, expose themselves to contracting terrible sicknesses in their daily contact with the rubbish dump.

Committees of residents from San Rafael and neighboring sectors have asked the cantonal authorities of Quito and Ruminahui for an immediate solution to this center of infection that the San Pedro River has become. But the answer has been negative.

In the face of this situation, the inhabitants are asking for the cooperation of the media to succeed in the authorities and obtaining the support of the citizenry in general so that the very inadvisable methods that are used at the present time to dump garbage will be changed, since with these methods it is not surprising that the appearance of epidemics is assisted, especially during the summer seaon.

One of the systems recommended is the recycling of the rubbish, as is being done in many countries. The Fundacion Natura suggests better planning of garbage elimination; the present method of "throwing out" the garbage into the water of rivers is nothing but transferring the problem to other locations by polluting the environment, and with it, food, persons and animals.

9545
CSO: 5000/2159

OIL SPILL CLEANUP, MONITORING PROGRAM ESTABLISHED

Cairo AL-AKHBAR in Arabic 5 Aug 82 p 6

[Article by Khalid Jabr: "Cleaning of Suez and Red Sea Coast Begun by Air and Marine Fleet to Protect the Shores"]

[Text] An extensive meeting was held today at the Ministry of Petroleum to discuss the contamination problem of the Gulf of Suez and Red Sea Coast. It was chaired by Engineer Ahmad 'Izz-al-Din Hilal, deputy prime minister and minister of petroleum, and it was attended by experts from the Ministry of Petroleum and commission.

Following the meeting there will be a field visit to the area day after tomorrow for a period of 2 days to determine the steps which will be taken to deal with pollution of the coast and remove the oil which threatens navigation, fishing and tourism in the Red Sea area.

Engineer Ahamd 'Izz-al-Din Hilal stated that the ministries of petroleum and defense are studying setting up an air and marine fleet to monitor the Egyptian coast in the Red Sea and the Mediterranean Sea and to protect them from the threat of oil pollution.

The Ministry of Petroleum will fund the setup of this fleet. It has actually set aside 10 million pounds initially. The Ministry of Defense will participate in managing it, because the governorates are not able to do this job. The new agency will apply all international laws which are in force within the framework of guarding against pollution.

The reason for the delay in gaining control over the recent accident is that the governorate does not have sufficient funds to fight it. Also, neither the Egyptian Petroleum Commission nor the Egyptian company which was loading thetanker has taken the initiative which is appropriate to the importance of the incident, in spite of the fact that this is the first accident for a 17-year-old company which has loaded 500 supertankers.

The situation will be brought under control and removal will be completed in about a month. The removal operation will cost about $1 million. It will be done by a French company under the supervision of an international expert.

One of the pipes which was delivering crude oil from the shore to one of the tankers at sea was ruptured three months ago. The break lasted for 15 minutes, until it was repa7ired. During this time, about 2500 tons of petroleum leaked out. This resulted in contaminating the water and a large oil slick spread to the Suez and Red Sea shores.

9605
CSO: 5000/5026

NATIONAL FORESTS THREATENED BY POLLUTION, OTHER PROBLEMS

Jerusalem THE ISREAL ECONOMIST in English Jul 82 p 21

[Article by Paul Hirschhorn]

[Text] "If the present landscape degrading processes proceed unhampered, only a few spots of open, unspoiled landscape with natural ecosystems will remain in the small areas protected as natural parks and reserves. Surrounded by an ugly man-made rock desert of dereliction and despoilation, these will also very soon be turned into overcrowded outdoor recreation slums, like the crowded beaches of the Mediterranean," says Prof. Zev Naveh, head of the Technion team studying the problem.

Such mountainous and hilly uplands — too steep or rocky for profitable cultivation — make up about 50 per cent of Israel's total area in the Mediterranean coastal region. These wildlands are generally covered by depleted shrub, dwarfshrub, and woodland communities of low economic value, which are in advanced stages of deterioration.

"There is an urgent need for new approaches in which the conservation and reconstitution of these ecosystems can be reconciled with socioeconomic development," says Naveh.

Until recently, the only efficient means of reclaiming these uplands has been the planting of dense pine forests.

"The Jewish National Fund's Forest Division has been highly successful in establishing these pine forests, even in the harshest conditions. Their rapid early development has given the mistaken impression that we can 'fool nature' by creating closed, relatively long-lived, productive conifer forests like those in subalpine climates in Europe," says Naveh. "However, in forests aged 40-50 years there are alarming signs of early decline, and the future production of even younger stands is severely threatened by the combined impact of air pollution and pest infestation."

"As our recent studies have revealed, photochemical smog, mostly ozone, created in the densely populated coastal region by motorized traffic and increasing year to year, is causing widespread damage to pine trees, which are very sensitive. The first, most severe cases of decline and mortality occurred in the Sha'ar Hagai Forest. This is located in the canyon leading from the Judean plains to Jerusalem, through which polluted air masses from the Tel Aviv region are channelled upslope. In recent years, similar typical symptoms of ozone damage have been found in all pine forests in northern and central Israel," says Naveh. "It would therefore be dangerous to rely on these species for future afforestation projects, or even to attempt to replace the dying trees with the same species, as was done in the Sha'ar Hagai Forest."

"These uplands are the only remaining refuge for a wide variety of plant and animal species and ecotypes their loss would be final and irrevocable," says Naveh.

"The aim of our studies is to find practical multiple-land-use patterns, especially for the rehabilitation of degraded uplands by environmental landscaping and afforestation with suitable plants, and by attempting to accommodate the richness of this landscape, which cannot be measured in terms of money, to workable planning and management schemes," says Naveh. "We want to integrate the beautification of our countryside with its commercial uses."

For this purpose, Technion ecologists have tested a great number of local and exotic shrubs and trees which are resistant to drought and limestone, but less vulnerable to fire and air pollution than the pines. They also seek candidates of greater overall multiple-use benefit. This study is being carried out in close cooperation with the Jewish National Fund's Forest Division in five denuded hillsides whose soil is typical of the shallowest and rockiest soils of northern Israel. All these plants were established and are being maintained in identical groups of ten to twenty seedlings, with a minimum of care and without irrigation, using methods, similar to those employed in pine afforestation.

Among the plants being studied are:

- fast-growing, soil protecting, low-cover plants;
- slower-growing but taller, more shade tolerant, evergreen shrubs;
- slow-growing but persistent, shade spending ornamental and fodder trees.

"It is still too early for final conclusions, but there are already a considerable number of highly promising plants which could replace inferior, naturally growing species," says Naveh. ■

CSO: 5000/4717

EFFORTS TO IMPROVE WATER RESOURCES MANAGEMENT OUTLINED

Tunis LA PRESSE DE TUNISIE in French 8 Aug 82 p 2

[Article by N. Querghi: "Stop Waste! Establishment of a National Tunisian Committee To Sensitize Public Opinion to Save Water"]

[Text] In the framework of the UNDP [UN Development Program] for improved management of water resources in the countries of the Maghreb (Tunisia, Algeria, Morocco) a National Tunisian Committee has been established with the task of sensitizing public opinion to save water and therefore to fight against waste and of developing an action program in this direction.

A preliminary campaign for the sensitization of public opinion will be undertaken. These efforts will be expanded over a period of 10 months to establish the bases for an education program on the consumption of water and to obtain the maximum benefit from this resource.

In fact, as Tunisia is located in a semiarid climatic zone, it has become important to develop water-use plans, over the short and long term, and to know how to manage the crisis. As it is also known that Tunisia is very sensitive to the effects of drought (limited reliability of rainfall), we have to adapt our way of life to the existing climatic constraints.

Furthermore, with the steadily growing increase in domestic consumption but also in view of the development of industry and irrigated agricultural areas, we will find ourselves, between now and the year 2000, faced with enormous difficulties. It is in this context that the newly established committee held a meeting on Friday [7 August] at the Ministry of Information, as a kind of reflection on the water problem and the future prospects.

In the course of this first meeting, in which the responsible officials of SONEDE [National Water Exploitation and Distribution Co] and officials of the ministries of agriculture and information took part, various questions were considered relating to the country's resources, consumption, and needs.

Imbalance Between East and West

The water problem in Tunisia is part of the structure of the country. In effect, water resources exist in the western part of the country, which has sufficient rain, while demand is strongest in the eastern part of the country, that is, in the coastal regions which are short of water. Thus, there is a regional imbalance, since the most heavily populated regions (the coastal regions), where industrial activity is concentrated, do not have enough water.

One the eve of the implementation of the Sixth National Plan, 62 percent of our water resources can be exploited, or 1.86 trillion m^3 per year (surface and underground water). Total water resources are estimated at 3 trillion m^3 per year. By the end of the Sixth National Plan exploitable water resources will reach the level of 2,315,000,000,000 m^3 per year, or 75 percent of total water resources.

Given the imbalance between water resources and needs, we must now think of constructing new installations even to meet existing needs and to conduct research, if necessary, into new methods of desalination of water and recycling water already used in order to get the maximum benefit from this resource.

On the other hand, requirements for drinking water for all of Tunisia are estimated at 200 million m^3 per year, of which 150 million m^3 per year are already available. At present, the extent of water connections in urban areas is about 75 percent, covering almost 3.5 million people. In the rural areas, this rate falls to 24 percent, covering about 1 million people.

About 2 million rural residents are still not served by the SONEDE system, which is engaged in carrying out a program to cover 4,000 additional localities. Regarding consumption, it is estimated that it is growing by 7 to 8 percent per year (the number of people subscribing to established water networks is growing 15 percent per year). Regarding consumption per capita, it is in the order of 80 liters per day, a rather small amount, compared to average consumption in Europe (more than 400 liters per day), but above the minimum established by the World Health Organization.

Moreover, the consumption of water (600 million m^3 per year) varies from one region to another. Whereas rural regions for the most part remain unconnected to the SONEDE network and therefore do not have locally available drinking water, the consumption of water in these regions is above average, although they are relatively short of surface and underground resources.

The concentration of tourist areas on the coast involves an accentuated consumption of water, which exceeds 400 liters per day per capita.

We should say that the situation is not critical, since, leaving aside some urban areas, SONEDE will be able to meet our needs for drinking water between now and the year 2000 (800 million m^3 per year). However, it is high time to sensitize public opinion, to the extent possible, on the need to limit national consumption of water.

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CSO: 5000/5025

REFORESTATION PLAYS ROLE IN FIGHTING SAHEL DROUGHT

Paris LE MONDE in French 10, 11, 12 Aug 82

[Article by Jacques Grall: "The Sahel: After the Great Drought"]

[10 Aug 82 pp 1, 22]

[Text] I. The Foresters of the Desert

> It is 1973--the drought is 6 years old. It has caused 50,000 to 100,000 victims, maybe more, in the Sahel. How is it possible to tell in these countries in which the fragility of the statistics is at least equal to that of the soil. In the last year alone, one-fourth of the livestock perished. The animals had begun dying of starvation in early 1969. A stream of food aid and development projects flowed into the Sahel countries starting in 1974--hasty and uncoordinated, as required by the emergency, a "never again" situation. 1982--the drought has not ended. It still exists in some parts. Food production has risen less rapidly than the population. Deforestation continues. But efforts are evident. We observed them in Niger.

On one side of the road, millet grows in green clumps scattered over white ground. A few millimeters of rain were all that was needed. On the other side there is sand, which sometimes invades the road. Then there is a forest, thousands of eucalyptus trees, in columns as though they were on parade, watered at their base by a drip system. Is this the Sahel? We expected the desert. In our European mind, we had imagined a cracked land with dying animals. And then here is a plantation irrigated with water drawn by two huge motor-driven pumps from the Niger River, flowing idly by an ocher bank.

Here in Namarde-Goungou, not far from Niamey, the World Bank has launched an intensive forestation project covering more than 100 hectares. The goal: to provide five percent of the wood consumption of the capital's inhabitants. One-fourth of production will be used to make posts for construction purposes in order to reduce the destruction of planted cuttings, which take several dozen years to resemble a tree. Trees will be cut here every 3 years.

The rest of the wood will be sold for heating. The experts have estimated that one hectare of eucalyptus trees, as a result of slowing the removal of other trees, will make it possible to indirectly protect 10 hectares of local species. The experts have planned on productivity of 30 steres per hectare per year and made an estimate of the cost of investment. This cost has been exceeded and amounts to 2 million CFA francs* per hectare, which, for the time being, provides only 10 steres annually ....

Operating expenses have also been exceeded: 100,000 CFA francs per hectare, with part of the additional cost resulting from the oversized pumping station.

But the project's profitability appears assured. Everything will depend on the sale prices of posts (today between 1,500 and 2,000 CFA francs) and wood, prices on which the government can speculate to adjust consumption. Niger's foresters, quite proud of their huge plantations, took the time to tell the truth. "This project is too costly." "We were forced to return to common sense." And the minister of rural development himself stated: "The lessons of the World Bank's project must be learned. Reforestation must be carried out by the population according to their needs."

Over the Kennedy Bridge stretching across the Niger River, opposite the proud Independence Square, an endless line of dromedaries carries back the city residents' daily wood supply. In the setting sun, with the reflection on the water, what a colorful scene for a pictorial photographer. But the loads rocking slowly to the step of the indifferent animals are an image of death. Niamey's woodcutters travel as far as 70 km to find wood. Each dromedary carries 1 stere and a stere is worth 3,000 CFA francs. "The cost of heating is often higher than the cost of food."

The Darling of the FAO

There are no other energy sources. And if estimates of needs vary--2 to 5 hectares needed per inhabitant--one certainty remains: that Niger's 14 million hectares of "forest" will not be enough for the country's 5.8 million inhabitants. The growth of the cities adds to the pressure on the forests: 10,000 residents means deforestation over a 15-km radius, a small desert. Niamey had 100,000 residents before the drought and 225,000 in 1977.

When asked "How much longer will wood reserves make it possible to hold out?", the young director of the program for planning and soil use was somewhat exasperated: "I don't know, but if nothing is done, this will be a disaster. Some people say that the Sahel is turning to desert, while others say that the Sahel is pushing into the desert. We are taking an inventory of long-term natural resources and an inventory of needs, and we are launching pilot sites where the population and forest rangers will be shown examples to follow."

The idea of forest planning dates back to the post-drought period and "spontaneous" failures. "The Green Sahel operation, or a green wall from Khartoum to Dakar, is a utopian idea. We are witnessing the emergence of a new Sahel, a slightly wiser trend of conserving what remains."

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*1 CFA franc = 0.02 French francs.

The World Bank and the foresters of the Republic of Niger have gone ahead with "dry" planting experiments. The cost of investment seems more reasonable: 2,000 CFA francs per hectare, 10 times less than with irrigation, and 70,000 CFA francs for annual maintenance. But yields are also smaller: 30 steres per hectare over 8 years. But plantations such as those of Birni Nkonni, planned over 140 hectares, are especially valuable as an example for motivating villagers to plant trees. Minioperations, mass forestry, also called social forestry, have become "the darling of the FAO," we were told. But it is meeting with mixed success in the villages.

A nursery of margosas and prosapis, imported hardy tree species, has been planted next to the reservoir of a large hydroagricultural development complex. The farmers who agreed to carry out the work of replanting, in order to establish an area for crop protection, have apparently not responded to the call. The use of "penal labor" is being considered. In this sector, in which irrigation facilitates the production of cash crops, the effect of reforestation is not visible. Farmers have the impression that they are working "for the government."

Mystical Forest

On the other hand, at Bouza in the department of Tahoua, a first in the annals of Sahelian forestry has been achieved with the planting, by individuals, of several hectares for the production of firewood. The revenue per hectare will probably be 2 to 3 times more than the income from agriculture.

It is also at Bouza that the green ring around the city has been undertaken. Started in 1974, it will surround the city at the rate of 1 hectare per year by 1988. In addition to wood, these green belts also provide shade and wind protection. Here and there it is not unusual to see young trees in the streets or on the market squares of cities and villages drenched in sunshine.

"A source of water, empty plastic pots, seeds of local species chosen by the population, such as baobab and tamarind, which are tending to disappear, an old woman to water them, minimal training for foresters": There you have a small village nursery, thousands of which the Nigerien Government would like to see financed. The movement is underway. Will it move faster than the wood burns?

Nigerien officials are doggedly trying to make the tree a national symbol! Tree Day, 3 August, whose creation dates back to the 1920's, has been restored to honorable status since the advent of the new government, even becoming the key feature of ceremonies commemorating independence.

This is because the tree, still the only source of energy despite timid attempts at coal distribution and solar energy research, represents even more: besides these ecological functions, it also has social and economic functions: food security through food gathering, maintenance of fauna and a natural pharmacopoeia (isn't it said that among its numerous virtues, the crushed leaf of the margosa tree can be used as a food preservative?)and maintenance of cultural capital, a sacred and mysterious forest.

But if all of that is true, then how is it possible to understand deforestation and the problems which the Sahel's inhabitants are having in becoming convinced of the need for replanting? The consequences of deforestation have been analyzed, as well as its immediate causes. But what are the underlying reasons for the lack of forest maintenance?

[11 Aug 82 p 17]

[Text] II. When the Dunes Turn Green Again

> The Sahel, whose future was greatly in doubt in 1973, continues to exist with difficulty, even though the effects of the devastating great drought are being felt less. One of the problems has to do with reforestation, since trees are still the sole source of energy (LE MONDE of 10 August), but efforts must also be made to use water in the best possible way, to irrigate under the best conditions, in order to ultimately provide enough food for livestock.

Water exists in the Sahel. It must be tamed and taught to remain prudent and discreet. Vegetation breaks the speed of water, reduces soil erosion, favors the accumulation of groundwater and helps to maintain temporary ponds. But water, which brings life, also brings about the desert: the concentration of people and overgrazing around a well cause the death of the soil. In Niger, the Sahel is divided into four zones; the one receiving less than 150 mm of water annually is desert or quasi-desert. It covers two-thirds of the territory (1.267 million square km, or just under 2.5 times the size of France). The northern Sahelian zone, which receives between 150 and 350 mm of water, is devoted to livestock breeding. Further south is the zone of dry plantings, which receives from 350 to 600 mm of water. Finally, on the borders of Nigeria, Benin and Upper Volta, rainfall is more abundant (600 to 800 mm) and makes possible the growth of denser forests.

So much for the scenery. It is a fragile setting, because the isohyets change and the balances of a lifestyle suited to natural conditions, nomadic livestock breeding in one area and itinerant farming in another, are precarious. On the way out of Niamey, at the Aghrymet research center, an agency of the CILSS (Permanent Interstate Committee for Drought Control in the Sahel), a table lists rainfall, 24.3 mm in the first 16 days of June, as well as the evaporation, 138.6 mm during the same period. The rainy season (from June to September) begins gently. If it arrives too early, sometimes in April, the millet grows rapidly and then burns in the still scorching sun. The stalks are only 10 cm high instead of 30 cm. If it arrives too late, the fodder and grain reserves are depleted during a long 8-month dry season. In this month of June 1982, the millet is late. Insufficient rainfall for the year is feared.

Delicate balance of rainfall patterns, fragility of agricultural soil: 85 percent of the population lives south of the 350-mm isohyet. Population density is 20 inhabitants per square km. Sometimes it amounts to 50 or 60 percent. Crops are concentrated in depressions, such as that of Dallo-Bossou, a former bed of a tributary of the Niger River. Today the lands are impoverished and yields are poorer. The excessively meager agricultural income does not make it possible to buy fertilizer. So there is only animal manure left, when it has not been used for cooking food, for lack of wood.

At Yegalalane, sand dunes as high as buildings surround a prosperous valley where sugar cane, sweet potatoes, henna and manioc are grown. As a result of the harmattan and water runoff, these dunes advance 2 meters in 3 months, threatening the fields which affect 6,000 people. With the financial and technical assistance of CARE [Cooperative for American Relief to Everywhere], an American organization, irrigation and forests have stopped the dunes: the villagers make hedgerows of millet on the tops of the dunes and on the windward slope; grazing is prohibited on the windward part and trees are planted. The result is spectacular: after 1 or 2 years, the dune turns green again. It has stabilized. Forty-five hectares have been worked in 4 years and 12 hectares will be worked in 1982. The population receives supplies in exchange for their work.

In this instance, the problem of the soil's fragility has been solved with a simple technique. Tilling with a plow and a pair of oxen, at first view, does not appear to be a transfer of advanced technology. And yet! Agricultural technicians advise the Sahelian farmers to clear the land of stumps in order to obtain better tillage. The result: when the land lies fallow, nothing holds it down and the desert progresses as a result of the combined effect of wind and plowing.

Stopping the Wind

Have you already considered the comparative merits of this or that type of windbreak? In the Caux country or in the Normand bocage, yes. But after leaving a landscape of lunar rocks, when the road merges with ravines on the mountainside and entering an amphitheater of crops covering several thousand hectares, the interest in windbreaks is less common. In fact, it is extremely rare. Since 1975 in this corner of the Majja River valley, 60 km of rows of windbreaks have been planted, protecting about 3,000 hectares. Initially, it was a matter of preventing wind erosion and dryness. In the small village of Garadoume, the farmers planted as many as 5 to 10 times per season: the wind scorched the shoots. Unexpected results are being noted today: plant fertility and the humidity are improving. Monitored over 5 years, production has risen by 25 to 30 percent. And then there is also recoverable firewood following maintenance of the curtain of trees. The delicate question of its distribution has arisen. There is the village cooperative, of course, which will decide the sale price based on needs and incomes. At least this is what the authorities want. But the problem is quite new and not resolved. As in the case of the planting of the windbreaks themselves, many meetings will be needed with farmers, the very ones who chased away a colleague of the CARE representative, who had advanced the preposterous idea of stopping the wind.

Another way of overcoming soil fragility: irrigation. According to some sources, the irrigable-land capital is probably 200,000 to 300,000 hectares, half of which will be irrigated from the Niger River. Six thousand hectares are being managed today. On the Majja River as well, the Nkonni project is not small; 3,000 hectares, with 1,500 hectares under irrigation, should make it possible to provide two harvests: one in the winter, over the entire area, and the other in the dry season, over only half the area. Sorghum and cotton are recommended for the first harvest, with cotton being used to pay for maintenance expenses and to supply local industries. Wheat, niebe, corn and potatoes will then be grown for the second harvest. The cost of the operation is not bad either and there are some businesses of developed countries for which the development credits are a windfall. Total estimate for the 3,000 hectares: 8 billion CFA francs. For the two dams, one built at Zongo in 1975 and the other at Mozague in 1980: 2 billion CFA francs, or 40 million French francs. The dike of the largest dam (a reservoir of 35 million cubic meters) measures 12 meters high and 600 meters wide.

Too Expensive and Too Fragile

North of Agadez at Indoudou, a pile of unused pipe cooks in the sun. In this station for the production of ameliorative seeds, German and Nigerien technicians have abandoned drop-by-drop irrigation methods using motor-driven pumps. Too expensive and too fragile, nor can it be moved for surrounding truck farmers. Yes, truck farmers who grow lettuce, melons, tomatoes and carrots in a quasi-desert! A little water is all that is needed. In an experimental station at Indoudou, they have returned to traditional methods: oxen for drawing water, using a clever "automatic" bag which closes full of water when the animal moves forward and empties into a hollow tree trunk when it stops; irrigation by gravity, using earthen canals which can be opened or filled at will: all that is needed is a clump of earth and the equivalent of a spade. The water which seeps out is not lost either, since also according to tradition, the oasis farmers grow both date palms and vegetables.

Then is irrigation "the" solution to achieving food self-sufficiency? Some people think so and advocate speeding up the programs. But I raise the question of the maintenance of irrigated lands and the use of these techniques, since all farmers are not in the habit of using them. Throughout the Sahel, the use of 5,000 hectares of land only slightly exceeds the amount of land not in use ....

The Grass Isn't Greener Elsewhere

Like the other states of the Sahel, Niger is a large livestock breeding country. The grazing area (235,000 square km) handles one-half of the breeders, while the others move around in the farming zone. Thus there are disputes over the land, which are sometimes settled violently. Before the drought, there were 4.2 million heads of cattle and 8 million heads of sheep-goats. The pressure on the soil and fodder resources was already great. After the six terrible years, half of the livestock was destroyed. In 1982, the Nigerien herd is almost reconstituted: between 3.2 and 3.6 million cattle and from 8 to 9.6 million sheep and goats. This result has been achieved through vaccination. In the department of Tahoua, for example, 72 percent of the cattle are vaccinated and it is hoped that 95 percent will be. Small ruminants are also vaccinated in the department of Agadez. Thus the pressure on the soil has again become dangerous. These two departments lost between 75 and 95 percent of their animals in 1974.

The government has established several breeding centers, such as that of Ibesten, 90 km north of Tahoua: there are 3,000 head of livestock on 42,000 hectares. There the best heifers are selected and reintroduced into the herds in order to improve the average breeding level. There they experiment with fodder, pasture maintenance techniques and extra food in the dry season (cottonseed and wheat bran were sold at cost price in 1982 and no longer subsidized). In the event of another drought, these centers could accept thousands of animals; combined with new slaughter capabilities, this would prevent the pointless destruction of livestock. But can the balance achieved in this center, between soil, water and animals, be transferred? It is undoubtedly still the most possible of the natural conditions of nomadic livestock breeding, with a little something extra, which is not negligible, since it is not unusual to see animals raised in the centers returning there. The grass isn't greener elsewhere.

The T-Shirts of the "Development Company"

Officials are today encouraging breeders to reduce their stock. While understanding the socioeconomic (and not sentimental, as is sometimes rashly said) motivation for building up on-the-hoof stock, it is a matter of convincing breeders that a better fed herd, and thus a smaller one, is economically as valuable as a large herd of emaciated animals. This is not easy, since no breeder likes to sell. To step up the movement, breeders would have to be encouraged to consume producer goods for their animals and consumer goods for themselves, such as transistor radios .... Then in order to distribute pressure better, the specialization of zones is being considered: breeding in pasture zones and raising and fattening in agricultural areas, which would send grain to the north in exchange. This plan, described as positive for "national integration," greatly resembles the division of labor adopted for livestock breeding in European countries. Have the induced effects been considered, in particular the cost of feed and transportation?

And goats? They were vainly banned in Senegal. These overgrazers are also the purse of the African housewife. To encourage them to reduce their stock, it would also be necessary in this case to raise prices.

At the Ibesten center, officials of the pasture management program have "put all the emphasis on human factors," worrying more about the problems of breeders than about livestock breeding. They are studying the behavior of family units, the movements of the nomads and the trade in animals. For the desired "changes" can result only from making the population aware of the requirements of "development."

In national terms and for the entire country, this translates as the "Nigerien development company," a kind of vast propaganda movement with ministerial and prefectural tours, the establishment of a network of village cooperatives and a village council, and orange T-shirts for the children, with the printed slogan: "Coordination, consultation, participation." But if participation were required by decree, would it be military?

[12 Aug 82 p 22]

[Text] III. A Production Contract

> Wood and water are the precious goods which people are arguing over in the Sahel (LE MONDE of 10 and 11 August), that region which caused so much talk at the time of the great drought of 1973. Developed countries have increased their assistance. But such aid can sometimes be the cause of instability if it is not used wisely.

There was instability in the Sahel before the great drought. Population pressure has since increased, by approximately 2.5 percent annually, along with the accompanying overgrazing and deforestation. According to the Nigerien minister of rural development, "whether production stagnates or picks up again, this is already a success." For all of the countries in question, there is no short-term solution. As Mr Georges Bourgoignie of the Sahel Club* neatly put it, "a production contract between the international community and the Sahel" is needed.

In the view of developed countries, the Sahel is a success. In 1979, public aid for development came to $40 per capita for member countries of the CILSS,** compared with $19 per capita for the rest of Africa and $8 in the case of Asia. This public assistance, which represents 90 percent of Sahel countries' foreign financial resources, amounted to nearly $7.5 billion between 1975 and 1980. Among the principal donors, France ranks first with 19 percent, followed by the European Development Fund with 12.7 percent, the FRG with 8.7 percent, the United States with 8.2 percent, the World Bank with 8.2 percent and Saudi Arabia with 7 percent.

The use of these funds is instructive. The category receiving the most money: infrastructures, at 19.7 percent. People were so struck by the problems encountered in distributing aid in 1973 that road projects blossomed. To such an extent that the Sahel Club, whose mission this is, had to meet with donors and show them a map of the road sections which were getting in urgent need of repair. Today people are wondering whether one-fifth of aid for infrastructures represents a good priority. Priorities will have to be adjusted before "the Sahel becomes a desert, with concrete roads and no one to travel them."

The category receiving the second-largest amount of funds, absorbing 13.7 percent of aid, is actually the emergency fund for government operations: support for the balance of payments and budget support. These unsecured investments are the price of relative stability and security as well. Their scope, which continues to increase, throws light on an aspect of Third World aid, that of the responsibility of governments in managing their economies: too many civil servants, prices widely subsidized for consumers, massive imports which destabilize weak local production, unproductive savings, paralyzed private investments and large bankrupt bureaucratic projects do not result in the production of wealth. Secondly, how many development projects no longer contribute anything because they involve endless operational costs and expenses (recurrent costs) not covered by donors and for which the governments cannot pay.

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*An informal association of donors' representatives and representatives of decision makers, with headquarters at the OECD in Paris.

**The Permanent Interstate Committee for Drought Control in the Sahel includes the Cape Verde Islands, Chad, Gambia, Mali, Mauritania, Niger, Senegal and Upper Volta.

Together with food aid (10.3 percent) and technical assistance (18.1 percent), this operational aid is part of the category of so-called outside-project aid, whose increase means "a deterioration of the economic and financial situation of Sahel governments," according to Mr Bourgoignie. In the case of programs for food self-sufficiency and to combat desertification, the percentages are lower: rainfall crops, 8 percent; irrigated crops, 9.5 percent; livestock breeding, 3 percent; fishing, 1.5 percent; and finally reforestation, 1.4 percent. But the Sahel Club's representative notes: "Of $100 million committed to rainfall-crop projects, one-fourth concerns food crops and three-fourths export crops." Concerning funds for reforestation, he adds: "It is little, but more than before, for they have risen 71 percent in 1 year. The donors and decision makers (the Sahel governments) were not sufficiently aware of the geometric deterioration of the forest."

The risk for Sahel governments, besides their own responsibility, is probably that the developed countries' interest in them might decline. It is apparently the disorderly pressure of public opinion which, since 1973, has motivated the "wealthy" countries to donate assistance and then to organize the struggle for survival with Sahel leaders. The poor results obtained will perhaps prompt donors to redirect their aid and, in that case, the "production contract" has little chance of being fulfilled. They will no doubt want to exert further control over outside-project aid and thus require unacceptable structural changes by the African governments. Such changes are unacceptable because there will be "interference" and because the permanence of the "established governments" would not be assured as a result of the sociopolitical effects of these changes.

If another risk factor were to be added to the already long list of the Sahel's weaknesses, it would be that of maintaining the level of international aid.

Since 1974, of course, the Sahel has not had any major crises and the goal of the CILSS nations is still food self-sufficiency by the year 2000, which means doubling vegetable and animal production. But how can this race be won when the elements of "progress" are themselves becoming sources of instability: too much animal pressure and too much population pressure.

To overcome the danger, the Sahelian formerly had a way out, but only one: movement.

Rotational movement of cultivated lands to prevent exhaustion; transhumant movement of animals from one source of water to another; and movement of the village as well. The drilling of wells has limited transhumance and has favored overgrazing. Mineral deficiencies are turning up in animals which no longer follow a "salty diet." Human beings, who cause desertification by cutting more and more timber, are still not protected against illnesses by becoming neosettlers: the "fecal peril," as the experts call it, lies in wait for them.

Finally, wouldn't people's greatest responsibility for desertification lie in becoming settled, in the absence of movement gradually being imposed by the more and more rigid structures of administrations and governments (what do the borders of Niger or Mali mean to a Peul breeder?), the trend of farmers settling on a piece of land, since the right of ownership, having come from the cities, is slowly but surely penetrating the countryside, where before only the right of usage was known. But in order to have the desire to replant trees for survival, isn't it necessary to consider a permanent habitat? So then, to move or not to move? This time, they are losing. And they would like the people to "participate" ....

11915
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RUIN THREAT INCREASES AS DROUGHT DRAGS ON

Johannesburg THE CITIZEN in English 3 Sep 82 p 8

[Article by Tim Clarke]

[Text]

UNLESS heavy rains fall soon, farmers in the northern districts of Natal and in the Natal Midlands will face financial ruin.

This was the opinion of many farmers contacted by The Citizen in both areas yesterday.

They said rain was needed within the next two or three weeks to break the three-year-old drought.

The worst-hit areas appear to be Dundee, Vryheid, Newcastle and Utrecht.

Water levels in the Dundee area are the lowest they have been for 20 years and even natural springs have dried up, say farmers in the area.

A spokesman for the Dundee municipality said six dams serving the town are only 15 percent full. He said that unless heavy rains fell soon, drastic water restrictions will have to be introduced.

Several farmers said it was estimated that northern district farmers owed the Natal Landbou Ko-operasie about R40-million because of the drought.

They said many of them had harvested only about 30 percent of their usual maize crop. This was a meagre 180 000 tons.

The position of many Black farmers in KwaZulu is also desperate. Their average yield is about five bags a hectare. Some of them say their maize yield on average will be only about two bags a hectare.

In the Natal Midlands, many vegetable farmers have been driven off the land because of the prolonged drought. Many of them have already stopped farming temporarily and have taken part-time jobs to keep going.

CSO: 5000/5815

BRIEFS

ZULU DROUGHT CURBS--Durban--The Mtubatuba health committee in Zululand has decided to enforce drastic water restrictions because of the crippling drought in the area. The health committee decided at a meeting this week to impose the restrictions. They include an immediate ban on the use of sprinklers as well as restrictions on the use of hosepipes. These can be used only between 4 pm and 5 pm on Mondays, Wednesdays and Fridays. Several other health committees and town councils in Zululand are also considering water restrictions because of the prolonged drought in the area. [Text] [Johannesburg THE CITIZEN in English 2 Sep 82 p 11]

CSO: 5000/5815

SHORTAGES HIT WATER PROJECTS

Harare THE HERALD in English 27 Aug 82 p 4

[Text]

WATER will determine the level of Zimbabwe's growth and development in agriculture, industry and mining, the Minister of Water Resources and Development, Cde Cephas Msipa, said in Assembly yesterday.

He assured MPs during the debate on the estimates of expenditure vote for his ministry that every effort would be made to ensure adequate water supplies for the nation.

He hoped very soon to sign an agreement with the Italian government to study research on exploitation of underground water in Nkayi, Lupane and Tsholotsho, which had been hit heavily by the drought.

BOREHOLES

Cde Msipa said his ministry had cleared many boreholes neglected during the war, but there were constraints due to shortages of engineers, technicians and equipment.

In response to a question from Mr Des Butler (RF, Eastern), he said his ministry was making increasing use of local consultants. Overseas consultants were only hired when needed, although some were being employed as part of aid programmes.

CONSIDERING

His ministry was considering an off-river storage dam at Beitbridge, raising the Antelope and Mwenje dams in the Chiweshe area, a small dam at Mutare, and pending Cabinet approval, raising the Kondo dam.

The minister said 5 500 boreholes had been drilled during the past two years and that 3 000 water pipes had been provided in rural areas.

Answering a question from Mr Arthur Tapson (RF, Makoni) about the drought, Cde Msipa said contingency plans had been applied.

VACANCIES

He said there were 90 vacancies for both water engineers and technicians.

But, even when filled, there would still be a shortage. Four expatriates had already been recruited and another 20 were being considered.

Cde William Kona (ZAPU, Midlands), wanted to know about cheap and easy ways of providing water. The minister said village water supplies were being planned.

"The old system where our women carry water on their heads for long distances must end," he said.

The vote was accepted.

CSO: 5000/5815

FRG, NORDIC BIOLOGISTS TO START CAMPAIGN TO SAVE BALTIC SEA

Stockholm DAGENS NYHETER in Swedish 4 Aug 82 p 30

[Article by Thomas Lerner: "Biologists Fight for Life in the Baltic"]

> [Text] The Baltic is still a very dirty sea. This is the message of the campaign which field biologists from Sweden, Denmark, Finland and West Germany will run next summer.

"It will be a giant activity. The politicians have long talked about the Baltic, but nothing has been done. Now people must be told how things are," says Magdalena Agestam.

She is the chairperson of the country's more than 13,000 field biologists and has great hopes for the "Baltic Sea Action" as the campaign is called.

The idea came originally from Poland, but the Polish equivalent to the field biologist has had great problems since the military coup last year.

"Baltic Sea Action"

"We hope they will join the campaign. So far it is clear that field biologists from Denmark, Sweden, Finland and West Germany will take part," says Fredrik Sjoberg.

He is a member of the national board of field biologists and is responsible for the Swedish role in "Baltic Sea Action."

"The intent of the campaign is to inform about the Baltic still being a very dirty sea and the situation not having improved during recent years," he continues.

If everything works, one boat each from Denmark, Finland, Sweden and West Germany will next summer travel along its own coastline.

"The boats are to visit the harbors and, through meetings and exhibitions, we intend to report what is happening in and around this very important sea," says Fredrik Sjoberg.

Illegal Dumping

According to the planners, at the end of July the four boats are to convene in Stockholm or Visby. There the campaign will be summarized at an international symposium.

"We are hoping for contributions from the Environmental Bureau, the Agricultural Department and different funds," says Fredrik Sjoberg. "Then we have our own money to spend.

Every year between 30,000 and 60,000 tons of oil are dumped illegally in the Baltic. Not only are sea birds severely affected by these dumpings, on several occasions there have been mass deaths of mussels, crayfish and starfish.

Large amounts of heavy metals (lead, zinc, cadmium and so on) and PCB are also let out into the Baltic. These compounds are deposited in the food chain and cause severe harm to animals and birds at the top of the food pyramid, for example seal and sea eagles.

Dead Areas

"The Baltic area is very dirty. The largest cities and the largest industries are situated along the coasts. The pollution is also especially clearly noticed here, as the Baltic has a very special character," says Fredrik Sjoberg.

The Baltic is more like an enormous lake than an ordinary sea. The water is brackish; that is, its salt content is between that of fresh and saltwater.

The exchange of water through the Great and the Little Belt is very small, and oxygen deficiency has occurred in many places. Several areas in the Baltic are dead; no life exists there.

"The Baltic must be protected against pollutants. But it is wrong to single out only individual companies and countries as responsible," says Fredrik Sjoberg.

"A cleaner Baltic is everyone's concern, and that is why we want to awaken people through our action. It is only too bad that we do not reach the people in the Eastern countries, because much is dumped from these countries," he continues.

The preparations for "Baltic Sea Action" have already begun. International camps have taken place in Kiel, Vastervik and Hailuoto in Finland. At the present time, field biologists from all over Sweden are gathered for 3 days in Hysingevik.

The small rustic town is situated south of Norrtalje, on the road out towards Furusund. A large part of the camp is devoted to the study of the Baltic. "We must learn in order to be able to inform. With this knowledge up our sleeve, we hope to be able to inform properly next summer," concludes Fredrik Sjoberg.

9843
CSO: 5000/2152

GARBAGE ACCUMULATION POSES HEALTH THREAT

Nicosia HALKIN SESI in Turkish 17 Jul 82 p 2

[Report by Mehmedali Gokdel]

[Text] The health of the people of Nicosia is threatened because of irresponsible acts by the municipal authorities.

Officials of the Nicosia Municipality sometimes give speeches about modern municipal services and say that they are providing all the services expected from a modern municipality.

It seems that while giving advice to the citizens about how a modern municipality should operate, the Nicosia Municipality has come to the conclusion that its services are not modern, and, so, it has stopped providing them.

Sanitary services have begun to be excluded from the list of modern services provided by the Nicosia Municipality, and the people have been left to live in unhealthy conditions in an apparent disregard for the cleanliness of the city.

Examples of this situation can be found around the Nicosia Municipal Market.

Although garbage dumping sites are supposed to be outside the city, the Nicosia Municipality is using a warehouse on Kuyumcular Street, where a lot of foodstuffs are produced and which is located behind the Municipal Market, as a garbage dumping site. It has been learned that the people living in the area are annoyed by the noxious odor of the dumped refuse which also poses a health hazard for the area.

The problem is made all the more serious by the fact that there is a candy factory and an ice cream plant near the garbage warehouse. Health experts we talked to said that the presence of so much refuse near the Municipal Market, where so many foodstuffs are produced and where people buy most of their consumption items, is a public health hazard, that it may cause an epidemic at any time, that food poisoning may occur, that there may even be deaths and that all dumping grounds must be outside the city in order to protect public health and the environment.

Shopkeepers working in the street where the garbage warehouse is located said that they cannot even stay in their shops because of the noxious odor coming from the dumped refuse. They said: "If we cannot be comfortable in our shops, it is highly unlikely that customers will ever come to our shops."

Meanwhile, citizens we talked to said that the Municipality is not giving the sanitation issue the attention it needs and that the Municipality must enlighten the people about sanitation. The citizens stated, however, that the Municipality does not even issue a statement on Environment Day which is regularly marked every year. The citizens added that the pollution of the environment by the Municipality itself is a shameful situation.

9588
CSO: 5000/5342

OXYGEN LACK KILLS FISH IN MORBIHAN

Paris LE MATIN in French 9 Aug 82 p 32

[Article by Michel Alleno: "Pollution: Tons of Dead Fish on the Morbihan Coast"]

> [Text] Fresh water diverted by a barrier caused reduction of the oxygen content. Perhaps 100 to 150 tons of dead fish were washed ashore in the Vilaine estuary near the boundary between Morbihan and Loire-Atlantique. The Scientific and Technical Institute for Ocean Fishing (ISTPM) still has not released exact figures, but the situation is so troubling that the prefect has set up a crisis command post.

Tons and tons of dead fish have washed up on the coast of Brittany near Damgan-Biliers, Penestin, and Tour du Parc, small seaside communities of southern Morbihan. The situation has become catastrophic in this region, which may have to pay the price for the construction some 10 years ago of a barrier at Arzal across the course of the Vilaine. According to many in the fishing trade, the masses of fresh water held back by this structure are the source of the pollution which occurred recently in the river's estuary. On the other hand, it is a one-time phenomenon on the French coast, according to the scientists, who have an explanation: "The heat associated with calm waters and rain and the absence of wind deprived the water of oxygen at the deeper levels, which favored the proliferation of plakton. And undoubtedly numerous fish were caught in this trap."

More than 150 tons of fish of all species were killed. Some fishermen have even had to abandon their trade. In the immediate future the most pressing problem is cleaning up the beaches with equipment, with the help of a work party of the local citizenry and summer visitors, who at times have to endure a terrible stench as they work.

9828
CSO: 5000/2156

REPORT ASSEMBLES COMPANIES' DATA ON HAZARDOUS WASTE

Stockholm SVENSKA DAGBLADET in Swedish 28 Jul 82 p 7

[Article by Claes Lofgren: "Storage Lacking for 5,750 Tons"]

> [Text] Every year Sweden produces hazardous waste equivalent to the cargo in 4,500 of the most common freight cars of the Swedish State railways. No solution exists to how waste equivalent to the cargo of 55 freight cars should be stored.

This is clear from a report recently presented by the Environmental Bureau. The information is founded on statements from companies whose manufacturing produces hazardous waste. Some companies answered inconclusively, some not at all. Thus the numbers are not reliable.

"Companies like BT Kemi would hardly declare on an inquiry from the Environmental Bureau that they have toxic drums buried," says Lars Asplund, manager of waste questions at the bureau.

The toxicity of the waste varies in both amount and concentration. If everything not environmentally dangerous were removed from the waste, close to 1,600 freight cars with "poison" would still remain. This consists of everything from PCB, which can cause sterility in animals, to oil spills, which, even in a relatively small concentrations, can ruin water supplies. Now at last the greater amount is handled in a relatively satisfactory way, say responsible authorities and companies in question.

More than 15 percent is burned in ovens, most of them approved. Almost a quarter is recycled. Some 40 percent is dumped at dumps, deposit plants or exported for final storage. Some 12 percent actually runs out in the sewerage in lawful and secure forms, according to the Environmental Bureau. As many as 7.3 percent of the companies say that they do not know what happens to their waste.

No Solution

For the little more than 1 percent--the 55 freight cars--there is no solution as to how to store the waste, which comes to a total of 5,750 tons. Most of this is waste with heavy metal content (1,900), oil waste (1,000), and chemical waste (1,600).

The counties handle 20 percent. The waste just ends up at the communal dump.

The handling is supervised by boards of health and county administrations. It is also the county administration which has to approve if a company, as a smaller part of its activity, accepts waste from other companies for safe-keeping, recycling or disposal. A third of the hazardous waste is handled by such companies or by companies licensed by the government.

"All in all there are methods to destroy most of the poisons we produce today; that they are not used is thus not a question of technology but a question of economics," says Carl-Axel Hjelte of SAKAB.

9843
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END

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29 October 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 374

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29 October 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 374

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FINNISH SCIENTISTS STUDYING LOSSES IN BALTIC SEA LIFE

Helsinki HELSINGIN SANOMAT in Finnish 21 Aug 82 p 8

[Article: "Eutrophication Smothers Bladderwort in Baltic Sea; Finns Study Seaweed Situation in Entire Baltic"]

[Text] The increasing eutrophication in the Baltic Sea has been determined to be the cause for the disappearance of the most beautiful seaweed, the bladderwort, from the Finnish marine areas. It has been choked out by the surrounding vegetation, which process has been augmented by the bladderwort-consuming seaweed crustations.

The investigation of the bladderwort situation in the entire Baltic Sea has now been assigned to the Finnish researchers, expanding their studies from the Finnish waters.

The bladderwort is a seaweed that abounds actually in large and salty marine areas, but it was fairly common in previous times even in the Finnish outer waters. Those who navigate the seas have considered the existence of the bladderwort to be an indication of the purity of the water. The bladderwort has disappeared as coastal waters near residential centers have become polluted. The first of these observations were made already in the 1920's in the waters off Helsinki.

The bladderwort began to disappear in the middle of the 1970's from waters that until then were considered unpolluted. The researchers who at that time were appraised of this situation by islanders were perplexed.

The researchers lay the blame, partially at least, for the increase in the nutrient content of the Baltic waters, which is damaging to the bladderwort, on the industries and the residential areas. A more significant cause for the increasing eutrophication than that brought about by the presence of humans is, however, the salty water that came in the mid-1970's from the North Sea, and in flowing northward brought with it nutrients that had settled on the North Sea bottom.

The origin of the nutrient supply in the Baltic Sea is also a subject of discussion, as to whether it is produced by humans or by nature.

Pike Disappears with Bladderwort

Dense growths of bladderwort form their own biological world rich in plant life, invertebrate fauna, and many species of fish, of which the most common are the Northern pike and the perch. The young fish seek shelter in the growths of bladderwort. When the bladderwort disappears the biological balance in the sea is altered. Many who most bitterly experience the disappearance of the bladderwort are the sportsmen who fish with lures, especially those who fish in the waters at Hiittinen. Formerly their hooks would engage by turn either seaweed or a fish, but now neither.

A dense growth of bladderwort is the pike's most favored spawning place and living environment. When that seaweed disappears, so does the pike. The perch also have decreased with the bladderwort. The perch, however, as a species is more adaptable than the bladderwort. For the perch the disappearance of the bladderwort is not a matter of such fateful significance as it is for the pike.

Bladderwort Recedes to Outer Islands

Two research groups are presently keenly engaged in Finland in the bladderwort problem. The Waterways Administration, together with the University of Helsinki, are studying the western part of the Gulf of Finland, while the University of Turku and the Abo Akademi are engaged in the archipelago sea in the Aland Islands. Licentiate of Philosophy Ilpo Haahtela of the Turku biological museum tells that continuous expanses of dense bladderwort growth are no longer encountered in the archipelago until the inner edge of the outer islands.

"Only isolated growths of bladderwort are still found among the inner islands and near the coasts. As recently as 10 years ago continuous growths were frequently found even in these areas," according to Haahtela.

Waterways Administration researcher Licentiate of Philosophy Pentti Kangas reports that the bladderwort situation in the western Gulf of Finland is much the same. According to Kangas, these researchers have abandoned the theories about poisons and diseases that were propounded at the beginning of the project. It has been impossible to point out any offender as being singly responsible in the disappearance of the bladderwort. The bladderwort suffered defeat as the sea altered to lush vegetation.

The victors are the fiberous seaweed growths and masses, of which one of the most conspicuous to all seagoers is the "green slime" alga. These alga masses prevent the penetration of sunlight into the water, thereby hampering the assimilating of the bladderwort. At the same time the amount of the vegetation growing on the surface of the bladderwort increases. The bladderwort cannot sustain this added weight and literally subsides to the bottom of the ocean.

The amounts of the seaweed-consuming crustaceans, which spend the early part of their lifespan in association with the fiberous algae, have also increased. The amount of this crustacean present in recent years in the archipelago waters and in western Gulf of Finland have multiplied many-fold over the amounts in the 1960's. During its early life this crustacean feeds on the fiberous algae and as it matures shifts to the bladderwort.

Haahtela stresses the fact that no obstructions have been noted in the reproductive process of the bladderwort. New growths appear even in the waters lush with vegetation, but they do not have the strength to survive.

The researchers studying the disappearance of the bladderwort in the archipelaga are looking also into the behavior of this seaweed itself for the cause. It is suspected that as the nutrient content of the seawater increases, the bladderwort tends to concentrate on growth, neglecting its defensive capabilities--by no longer making itself ill tasting.

The University of Turku and the Abo Akademi plan to expand their studies into the open seas, while the Waterways Administration and University of Helsinki will expand into the eastern part of the Gulf of Finland.

The researchers have another task that has been assigned to them by the Baltic Sea Protective Commission, namely, to determine whether the bladderwort is undergoing similar disappearance elsewhere in the Baltic Sea as that in the Finnish waters.

CAPTION: The bladderwort is a victim of a change in the ocean. Before final disintegration the weed acquires a frayed appearance and a chalk-like texture.

5955
CSO: 5000/2158

BRIEFS

BALTIC SEA CONFERENCE--For the third time the making of arrangements for a conference of Baltic Sea researchers has been assigned to Helsinki. The meeting, which is the thirteenth in the series, opened on 24 October and will close on 27 October. The purpose of the meeting is the reporting of the results of the research carried out during the past two years and to draft a research program for the next two years. Nearly 80 researchers from seven Baltic Sea coastal countries are participating in the conference. The Baltic Sea researchers have been meeting regularly since 1957. Finland has hosted the meetings two times previously, those of 1957 and 1970. The main theme of the 1982 meeting are the latest results of the physical and biological oceanographic research. The 79 scheduled presentations will cover such subjects as the effect of the coast and the open sea upon one another, the effect of the bottom on water movements, and Baltic Sea exchange of water with the North Sea. A considerable portion of the chemical and biological presentations deal with the contamination of the sea and the effect of that on the biology. [Text] [Helsinki HELSINGIN SNAOMAT in Finnish 25 Aug 82 p 9] 5955

CSO: 5000/2158

SERIOUS POLLUTION THREAT SEEN IN MINING PROJECT

Bombay THE TIMES OF INDIA in English 30 Sep 82 p 19

[Text] Raipur, September 29 (UNI)--A serious environmental pollution hazard hangs over vast tracts of rich forest and agricultural land situated along the 32-km-long course of Sankhini, which carries huge quantities of iron ore wash-out from the National Mineral Development Corporation's (NMDC) prestigious Bailadila project.

The largest mechanised iron-ore mine in Asia, Bailadila has become the bane of hundreds of villages inhabited by Halva tribals in the thickly wooded Bastar district of Madhya Pradesh.

The pollution threat has assumed such serious proportions over the past many years that the entire river has turned ochre-red and has been nicknamed "Lalpani" by the tribals.

District and NMDC project officials hesitate to initiate preparations on a war footing to contain the pollution.

The erux of the problem lies in the construction of a tailing dam to arrest the flow of iron ore wash-out from deposit-14 at Kirandul. At present the ore wash-out is seeping into the river.

NMDC officials have already received sanction for construction of a tailing dam, but are unable to acquire the lands from the tribals who have threatened to launch an indefinite agitation to press their demands before the dam is constructed.

The tribals have also repeatedly prevented district and project officials from surveying the area.

The Lok Dal-affiliated Dantewada, Adivasi Vikas Parishad and the district unit of the Communist Party of India are the two main political organisations spearheading the agitation against the construction of the dam.

The tribals are demanding employment avenues in the Bailadila project and adequate compensation.

The ruling Congress (I) has made it a prestige issue and raised several objections in the larger interests of the vast majority of the tribals who inhabit the Bailadila mountain ranges and plains through which the Sankhini flows.

Meanwhile, pollution of the river continues unchecked so that all along the Sankhini's course huge deposits of iron ore wash-out have accumulated making the water unfit for drinking, bathing and even washing purposes. Danteswari temple priests told a visiting UNI correspondent that pollution had made a deep impact on the psyche of the Halvi tribals who have started believing that the goddess would one day come to their rescue.

According to the priests, thousands of tribals who visit the shrine are appalled at the sight of the discoloured Sankhini and Dankini rivers, both tributaries of river Indravati.

The authorities have provided potable water for the villagers by digging tube-wells in almost all the affected villages.

CSO: 5000/7002

INDIA

BRIEFS

WARNING TO INDUSTRIAL UNITS--New Delhi, Sept 28--The Union Deputy Minister for Environment, Mr Digvijay Singh, has warned industrial units of stern action if they fail to observe the prescribed safeguards against air and water pollution, reports UNI. Mr Singh said he had asked the Central Water and Air Pollution Control Board to furnish details about the case relating to a local industrial unit which has been directed by a local court to stop discharging effluents into the Jamuna by November 30. The Deputy Minister said State Governments should direct the water and air pollution boards concerned to initiate action against erring industrial units. Existing laws were adequate to deal with pollution if they were strictly enforced. Mr Singh said the Centre had plans to set up a special authority to protect the environment around historical monuments and added that Mrs Gandhi had shown keen interest in the proposal. He could not say when such an authority would be formed. He said the Centre was also examining the prospect of setting up a Himalayan Environment Institute by early next year. The Centre would seek the cooperation of Nepal and Bhutan for the purpose. Referring to the fears expressed by the Gandhi Peace Foundation that the Aravalli Hills in Rajasthan might turn into a desert because of indiscriminate deforestation and extensive grazing, the Deputy Minister said the foundation's study was "overdramatized." He, however, admitted that there had been large-scale soil erosion there owing to depletion of forests. [Text] [Calcutta THE STATESMAN in English 29 Sep 82 p 6]

CSO: 5000/7001

WIND EROSION THREATENS HALF SOUTH ISLAND'S ARABLE LAND

Christchurch THE PRESS in English 10 Sep 82 p 17

[Text]

Forty-six per cent of the arable land in the South island is affected to some degree by wind erosion, and this is the land where the greatest potential for economic loss exists.

Mr R. T. Salter, of the Ministry of Works and Development land resources group, at the Water and Soil Science Centre at Aokautere, Palmerston North, said a national assessment of erosion has been carried out by the group.

This inventory recorded the location and severity of each erosion type, including wind erosion.

It found the distribution of wind erosion in the North Island to be in four distinct regions—Northland coastal dunes, Manawatu sand country, northern Wairarapa and the Kaweka Range-Tongarire National Park area.

The influence of the Southern Alps means most areas east of the main divide are susceptible. He said there were nine areas affected.

These are the Wairau Valley and Blenheim coastal area, the Upper Clarence and Awatere Valleys, North Canterbury hill country, Canterbury and North Otago plains and downlands, Central Otago-Waitaki Basins, Northern and Central Southland plains, the Te Anau Basin, the drier high mountain country east of the main divide and the Otago uplands.

Mr Salter said although only slight wind erosion is recorded on the majority of affected land, 26 per cent of the total area has a moderate or greater severity recorded.

"This land comprises the river gorges in Canterbury where very high wind velocities occur as a result of wind funnelling. The other significant areas are the inland Central Otago and Waitaki Basins, where low rainfalls and frequent dry winds result in the poorly structured soils of these basins being susceptible to severe erosion."

Because 46 per cent of arable land in the South Island is affected, the policy of the National Water and Soil Conservation Organisation is directed towards protecting these areas, he said.

A calculation of how much land could be affected had been made, basing the assessment on erosion potential under average land management and with no conservation measures being applied.

On this basis, 7.1 million hectares had been assessed as having moderate or greater wind erosion potential. Of this area, 1.3 million hectares are in the North Island, comprising those areas already affected by erosion, as well as localities exposed to high winds and which experience poor growing conditions.

In the South Island, 5.8 million hectares, or nearly 40 per cent of the island is susceptible to wind erosion.

"Almost all of the area east of the main divide has a moderate potential. The area of severe potential comprises Central Otago, Waitaki Basin, North Canterbury hill country, and parts of the Southland Plains," Mr Salter said.

"The high mountain country has a very severe wind erosion potential, along with parts of Southland, and the upper Clarence and Awatere Valleys."

CSO: 5000/9079

FIRST OIL SPILL IN RED SEA

Cairo AL-AHRAM in Arabic 4 Aug 82 p 3

[Article by Lamis al-Tahawi]

[Text] Forty-eight hours later Oil Minister 'Izz al-Din Hilal, and a party of pollution removal experts fly over the Red Sea coast to see the effects of the pollution caused by the crude oil leak from a tanker that took on oil at al-Ghardaqa. The oil minister will make the same trip on Sunday to assure himself that the Red Sea coast is free from pollution.

What happened was that a tear in the hose carrying crude oil to a tanker from the shore resulted in 17,500 barrels of oil leaking into the Red Sea in 15 minutes, i.e., about 2500 tons of oil turned the beach at al-Ghardaqa and the area behind it into masses of oil mixed with sand.

This was the first accident of its kind in Egypt in the course of a trip from work in oil fields in 57 years.

It may appear unusual for the region but compared with what happens in [other] regions of oil exploration and production, it seems to be quite common.

The dredges and the entire pollution removal equipment set out from the Red Sea coast.

An internationally known expert who took part in removing the pollution that followed the accidental sinking of the AMOCO CADIZ off the Spanish coast came to Egypt and is now working with Egyptian experts in cleaning up the Egyptian coast.

They called for this expert after an initial attempt was made to clean up the beach when it became clear the operation would take a long time. This method involved moving the coagulated oil from the beach to an isolated place, sprinkling the beach with clean new sand, and actually covering the part in front of the governorate building and houses of the officials on the sea with sand. The tractors are still working.

Continuous meetings--from the day the disaster occurred until today, i.e., for 4 months and 4 days--produced a second "hellish" idea: the strips method, i.e., tossing strips of cloth into the crude oil covering the beach so that they can soak up the spilled oil.

The only simple way used by Monsier Bilinguez, administrator of the town of Majawish, is to hire a group of strong men at a daily pay of 5 pounds who will divide the beach into small areas and every day take away the masses of oil-soaked sand under the water along the Majawish coastline. This operation should take 3 months.

The crude oil covering the beach is a real problem for us, as the town administrator says, for we were expecting 60 tourists and only 13 showed up because they heard of the spill and the sea is the main tourist attraction here. The pollution makes it impossible to do anything--swimming, fishing, or engaging in other kind of recreation.

Engineer Mas'ad Muhammad Mas'ad, director of operations for the Gulf of Suez Company in Shaqir, said: The organization has 6 departments concerned with pollution.

Dr Mustafa Sha'rawi, director of operations and deputy chairman of the board, said the government is very much interested in eliminating pollution by crude oil. Regulations and laws are about to be issued specifically for tankers that come to the port of Ra's Shaqir to be loaded, clean their tanks with water, and then dump this water into the sea with the oil sediments remaining in the tanks.

'Adil Tahir and the chairman of the environmental commission together with the local administration and the oil commission came to remove the pollution along the Red Sea coast from al-Ghardaqa to Ras Banas. The oil commission offered to pay a million pounds for the clean-up, but the Red Sea governorate rejected this amount because the operation will cost 12 million pounds and be handled by a French company that specializes in this kind of work.

But what do the tourists here say?

Al-Mahdi al-Bahr from Tunis says: "The amount of crude oil on the beach keeps increasing every day because of the winds. What happens is that the sand mixes with the oil, becomes heavy, and sinks under the water. When we go to bathe, the "pitch" covers our entire body and clothes."

Engineer Nabil Halawa from the Sudan says: "I suffered from urticaria because the seawater was polluted by crude oil."

Majdi 'Amin Yusuf, representative of the Holy Family School in Misr al-Jadidah says: "Spending 3 days here on the Red Sea is like staying a whole month in any of our summer resorts, but unfortunately, the accident that caused the oil spill spoiled the air."

Dr Hammad 'Abdallah Hammad, a professor at the University of Hilwan, says: "We are first and foremost responsible for the pollution--this for a number of obvious reasons, chiefly the failure to apply international law, which every civilized country in the world applies, e.g., the most important countries famous for tourism like Italy, Spain, and Greece, which possess very extensive coastlines."

What would happen there if their beaches were threatened by such oil pollution? Would they leave them that way? This is the question that must be answered by officials of the Red Sea governorate, especially in the light of what the president of the republic said to the effect that the income from tourism was less than what was estimated and did not cover oil and sugar supports. We must therefore enforce international law to protect our beaches. This is one of a thousand steps we must take to promote tourism, Egypt's real hope of increasing its revenues--and not its losses--which we need very badly.

Dr Sami Salim, the official on the oil commission responsible for protecting our beaches from pollution says: We are still studying the present condition of the Red Sea shoreline and drafting strict laws to prevent the pollution which damages industry, tourism, the income of the town from fish, which is clearly inferior, and many houses of the townspeople who depend on fishing in al-Ghardaqa for their livelihood.

At any rate, everything possible is now being done to remove the pollution. Oil minister 'Izz al-Din Hilal will fly next Saturday and Sunday over the region to survey the clean-up operation on the most beautiful beach in Egypt.

The experts say the clean-up will cost 12 million pounds and that a French company will begin the job with the assistance of an internationally known expert who has come to Egypt for this purpose.

5214
CSO: 5000/5024

AGRHYMET PROJECT TO IMPROVE METEOROLOGICAL, HYDROLOGICAL STRUCTURES

Nouakchott CHAAB in French 3 Sep 82 p 3

[Text] As a result of the drought that has raged in the Sahelian region since the beginning of the 1970's, CILSS has undertaken, with the assistance of the United Nations, to set up a series of priority projects, including the Agrhymet Program, which consists of improving agrometeorological and hydrological structures and departments in Sahelian countries.

This project includes: eight national projects in the seven countries of the Sahel and Cape Verde, a regional center in Niamey responsible for coordination of the program, the training of technical personnel and the processing of basic data on a regional scale.

The program began in 1975 at the regional level and in 1976 in Mauritania.

Objectives of the Agrhymet Project in Mauritania

To improve networks of meteorological observation and hydrological stations; to process agrometeorological and hydrological data and distribute such data to users in assimilable form; to train personnel within the framework of the national project; to recruit candidates for the training of technical personnel at the Niamey regional center; to provide the country with an agrometeorological and hydrological structure capable of participating in development efforts; and to promote links between that structure and user departments.

Completion of the program was designed to follow these phases: 1) an expansion phase during which national departments are to be reorganized, observation systems and equipment is to be installed and technical personnel trained. This phase is to lead to the initial level of operation and last 5 years (1976-1980). 2) a development phase that is to lead to the fully operational level (1982-1986). The year 1981 is a transition enabling certain CILSS countries to complete phase 1. 3) an operational phase. Although the expansion phase has already been extended by 1 year (until the end of 1981) in order to handle delays in certain countries, it quickly became apparent that it would be necessary to extend it for several more years before moving into the development phase.

In Mauritania, certain activities planned for this expansion phase are not completed, such as the training of personnel, the installation of necessary telecommunications equipment, reorganization of national departments and the construction of buildings.

Financing

The project is being carried out by the World Meteorological Organization (Geneva) and financed by the UNDP and donor countries within the framework of CILSS.

The first phase, 1976-1978, was financed by a regional UNDP program and cost 20 million ouguiyas.

The second phase, 1978-1980, was financed by the UNDP CIP [expansion unknown] and totaled 16 million monetary units, in addition to training scholarships taken from the Agrhymet regional program. With the extension of this phase until July 1982, the budget totaled 38 million ouguiyas.

Inasmuch as the project was not approved by the government until September 1977, it was not possible to open an individual heading in the national budget for the project in 1976 and 1977. Its operation was therefore the responsibility of the general budget of the Hydraulics Directorate. Expenses during that period are put at some 1 million ouguiyas.

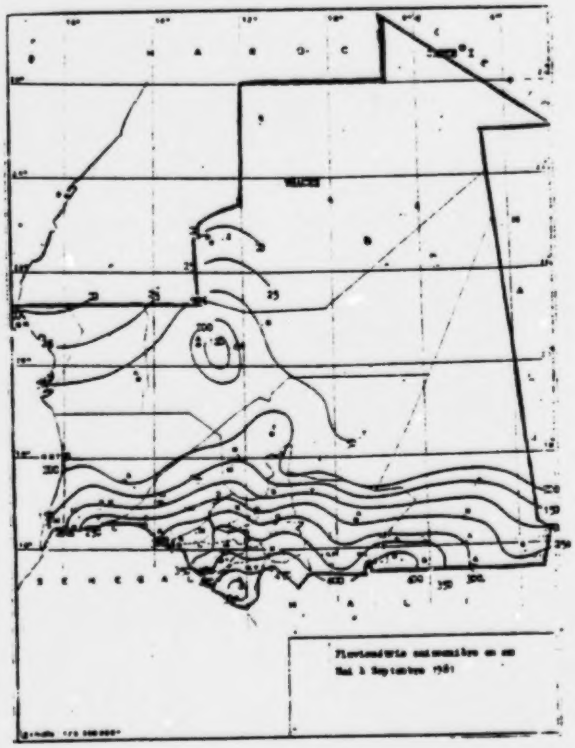
A counterpart budget for 3.5 million ouguiyas was included for the first time in 1978 and repeated in 1979.

This budget was to evolve in keeping with the increase in national personnel and the volume of project activities.

However, no sum was included in the "investment" budget for 1981-1981 and 1982, despite approaches made to the departments concerned. During those years, the Hydraulics Directorate had to use its own operating budget -- at the expense of its own activities -- to pay for personnel, operating and maintenance costs of the project.

Completion of Project

Despite circumstantial difficulties and the inadequacy of operating credits, the project has carried out the following main activities: the establishment of six new agrometeorological stations; the improvement of some meteorological stations managed by ASECNA [Agency for Air Navigation Safety in Africa and Madagascar]; the establishment of some 40 pluviometric stations; the installation of six hydrological stations in the Senegal River region and the Gorgols; the establishment of an instrument maintenance laboratory; the installation of three radiometric (solar radiation) stations; the training of Class IV personnel (hydrological observers and operators); the training of three upper-level technicians in agrometeorology and four in hydrology. Some technicians are sent for training as engineers and others have left the department. A single hydrology technician in now in service. Other activities include: the creation of a section for the handling and filing of agrometeorological data; regular publication of pluviometric and hydrological bulletins and reports; the drafting of a document proposing the establishment and organization of



Seasonal rainfall in mm, May to September 1981

[Map caption] Except for the region of Adrar, rainfall was lower than normal throughout the country. However, the deficit is relatively low because the relationship to the normal amount is from 80 to 90 percent in agricultural and grazing regions (the Hodhs, Assaba, Guidimaka and southern Trarza). Total rainfall exceeded 90 percent of normal rainfall at Kiffa (94 percent) and Rosso (97 percent). Two areas with a more marked scarcity (50 to 60 percent) were observed: northern Brakna, Trarza (Boutilimit, Aleg, Magta-Lahjar) and western Assaba. In addition, it should be noted that most rainfall came during the third week of July and the month of August. The month of September was relatively dry, except for some strong rains in the central region (Assaba, Guidimaka and Gorgol).

national agrometeorological and hydrological departments in order to ensure continuation of project activities; and the proposal of a liaison structure between these departments and users of meteorological and hydrological data.

The lack of means of communication, so indispensable to the timely transmission of information, constitutes a real obstacle to the action of the Agrhymet project.

A solution must be found as rapidly as possible.

The establishment of a national organization of agrometeorology and hydrology must be the main justification of such a project, especially since there are enough national personnel: 12 meteorologists and 4 agrometeorological engineers to head it, and since its usefulness is obvious, for it will be called upon to supply precious information for agriculture, livestock raising and meteorological coverage of the national territory.

11,464
CSO: 5000/4601

COUNTRY'S POLLUTION PROBLEMS EXAMINED

Damascus AL-BA'TH in Arabic 10 Sep 82 p 5

[Article by 'Ali 'Abud: "The Pollution Problem in the Country; the Problem, the Dangers and the Means of Dealing With It"]

[Text] The pollution problem is no longer confined to one government against another; since at least 1972 it has become an international problem. That was the year the United Nations held a conference for the Human Environment in Stockholm, Sweden. Apparently, pollution is the heavy price for human civilization, and the tax which the city must pay in order to achieve industrial progress and technological advancement. It is no exaggeration to say that the effects of the pollution problem will become increasingly worse, and its dangers intensify, as the world achieves greater population growth, along with agricultural and industrial development, and scientific achievements in various modern technological fields.

In this regard, Syria is among those nations that have experienced economic and industrial developments on various levels, since through continuous growth processes it has begun to experience bit by bit, some pollution problems, and recently has begun to suffer from some of its serious phenomena.

The issue that we raise, in our discussion about pollution, concentrates on the following questions: What is pollution? What are its sources? Can its dangers be stopped? How can we find ways to ensure the elimination of these dangers? Who are the agencies responsible for fighting pollution in the country? To what degree has the problem advanced at the present time.

Dangers of Pollution Still Unknown

These questions that we raise were in fact motivated by serious discussions in the People's Council, especially since talk about pollution has been raised on one occasion, or another by the citizenry. We all see plants and factories, whether old or new, that emit gases or abandon waste products without ensuring that they will be taken care of by ways that will ensure no pollution, no matter what the kind. The media, and especially the press, has partially raised problems of pollution, through discussing our economic facilities, and in a more comprehensive way, through investigations of this problem in a plant or a factory. The People's Council's concerns about pollution come naturally from the existence of a supreme people's organization seeking information about and dealing with public issues, making studies and drawing up plans for the executive authorities to deal with these issues by objective means to ensure finding radical solutions for them.

In accordance with all these considerations, a committee was formed in the People's Council, called the Committee on Environmental Pollution, composed of five members and chaired by Mr Tawfiq al-Naqri. It was formed in accordance with the decree of the president of the People's Council, No 124, dated 10 August 1982.

Concerning the goals and purposes for which this committee was formed, Mr al-Naqri said that the matter of pollution was critical and raised serious consequences. The matter was in fact present and current; however, what was needed still was to define the fact that we are still ignorant to some degree of the extent of the danger of pollution in our country. This is something that is currently impossible to say, as the committee chairman states, because simply put we do not have accurate measurements to clarify the percentage of pollution. Is this percentage at a permissible level by international standards, less or more?

What Are the Sources of Pollution?

Mr Tawfiq al-Naqri's question in fact raises other questions no less important than that one about the degree of danger of pollution in our country, since pollution has to increase in the future with the increase in economic and agricultural growth, as well as technological advancement. As we pointed out in the preface, pollution results from the establishment of more factories and industries that discharge waste products and poisonous gases. This is a matter referred to by the Stockholm Conference, when it affirmed that the future of development, or rather perhaps, the continuation of the human species, was surrounded by increased dangers, due to man's mistaken behavior in the environment, which has begun to be unable to tolerate the damage to which it is subjected.

If we try to identify the sources of pollution in the country, we shall find that they are various and are found in nearly all the provinces. This is natural. We have made rapid progress in our growth processes, especially during the past 10 years. Nearly every province has pollution problems that differ from the other provinces. In Tartus Province, there is a land and air pollution problem caused by the waste products of the Baniyas refinery, the cement factory and the ships that anchor in the port either to load or unload cargo. This is in addition to the problem of pollution of the Sinn River waters. There is a water and air pollution problem in Homs Province, stemming from the new factories, such as the Super Phosphate, Urea and Aluminum plants. In addition, there are the older industrial plants such as the cement and sugar factories and the refinery. In al-Hasakah Province, there is a water pollution problem in the al-Khabur River, and in Damascus there is an air pollution problem from the waste products of the plants scattered about in al-Ghutah, apart from the problem of land pollution caused by sewers.

If these waste products that create the pollution problem can be found in any country, then in the view of the chairman of the anti-pollution committee, the basic issue is to concentrate on defining the dangers of this pollution, after learning the degree that it has reached, in order to determine scientific ways to put an end to these dangers, since putting an end to them completely is impossible. In other words, the pollution problem must be put in a logical framework, must be handled to the extent in which it cannot constitute a danger to the life and health of mankind.

We asked again about the areas which could be affected by pollution, so that we could see to what extent they could constitute an actual danger to the citizens. Mr al-Naqri said that pollution affects the earth, water and atmosphere. It comes from two sources, pollution by act of nature, such as earthquakes, volcanoes and floods, and pollution by act of man, through his interference with nature, such as building factories, or the population explosion or wars. Mr al-Naqri added that pollution was a very big matter, and that it was no exaggeration to say that it began with the garbage can in the house, went through the overcrowding in the cities and ended with the largest industrial establishments in the country.

If we try to talk accurately about the areas of pollution, we shall find that there are three main areas:

* Explosive population growth and the increased demands for food and the other necessities of life, as well as adequate health conditions.

* The scientific and technological revolution and the environmental pollution it has caused, and the continuation of exhausting resources, in view of the enormity of this revolution. It causes pollutants which return to the body of man in the air that he breathes, the water he drinks, the food that he eats and the sounds that he hears.

* Disturbing the natural balance in the environment, through man-made acts such as constant growth in population, exhausting resources, changes in the climate and encroaching desert.

Reprocessing Accumulated Pollutants

It was made clear earlier that the problem of pollution is serious and requires all our assets and efforts to find useful solutions for this grave problem, which worsens day by day. Factory waste products, as stated by the chairman of the Environmental Pollution Committee, need to be dealt with at once. Carbon oxide gas is produced by most of our factories, along with phosphorus waste products from the super phosphate and urea factories. There are ways to get rid of large accumulations of these pollutants. Mr al-Naqri affirms that a solution has been found to this problem in the advanced nations, where they are reprocessed and used again in the cinder block industry. City waste products of wood and metal are also used again. A special factory is built that separates the wooden and metal materials, so that they can be reprocessed. Moreover, sewer water is collected in many countries to be treated before being used for agriculture or dumped into the sea. There is serious consideration being given to the idea of using fresh water derived from this sewer water for domestic uses. Empty aluminum cans also can be made use of, by melting them and making new strips of aluminum from them for various purposes.

In our country, we still suffer from pollution without finding a serious solution. Mostly, we burn these waste products, but even this method creates pollution in the cities. Therefore, it cannot be considered a serious and effective solution. Accordingly, in the committee's view, we need to recognize the problem of pollution, clarify its dangers and inform the authorities concerned of the facts of this problem, in order to push them in one way or another to realize the parameters of this problem and to understand its dangers. In this way, practical solutions may be found to rid ourselves of pollution through the scientific means that are being used in several fields, such as reprocessing as is done in advanced nations, or disposing of it by modern means other than by burning, since that retains it in the atmosphere and increases the amounts. This then increases the dangers of pollution, which impels us to ask the authorities responsible for combatting pollution in the country. Is there a single authority or many authorities?

Lack of Anti-Pollution Coordination

The People's Council's anti-pollution committee has made numerous contacts so far with all agencies that have some connection with the issue of pollution, and it is still following up with those agencies, for the purpose of continuing to gather information in order to arrive at appropriate concepts for this critical issue.

The committee chairman confirmed that there is no single agency in the government that has overall authority to deal with pollution. Nearly every ministry has an agency to deal with pollution or to be more accurate, that is interested in dealing with this matter from various positions. In the Ministry of Reconstruction and Development, there is a directorate to combat water pollution, and in the Ministry of Transport, there is a ports directorate to fight the pollution of sea water by ships' waste products. The Ministry of Health has a preventive health directorate to combat food pollution.

Thus we can see that there are many authorities interested in the subject of pollution from the aspect that concerns each of them. However, the significant point is that these authorities work separately, since there is no coordination whatsoever among them. This means that none of them makes use of the other's expertise, especially since pollution is a complicated matter and is directly connected with man's life. In most cases, there is more than one aspect to the problem, which certainly requires a kind of coordination, in order to reach satisfactory results.

Therefore, so that the matter can be seriously and effectively handled, a supreme council or ministry should be formed, which could be called the Ministry of the Environemnt, patterned after the advanced nations, concerned with environmental affairs and with combatting pollution. Dealing with it through directorates is piecemeal and limited. In order to achieve effective results, there should be centralized action leading to stopping the dangers of pollution against man and the environment at the same time. In order to clarify the need to establish one centralized antipollution authority, Mr al-Naqri cited the example that water laboratories in Homs were unable to reach unified results through the equipment available to them, since contradictions occurred in the analysis of water and its suitability for drinking. This caused the province to send samples of this water to a foreign country. The significance is that pollution measuring equipment available in this country is inaccurate, out of date and not compatible with technological advances in this field. It is evident that the only agency that currently has equipment like this is the meteorological bureau. However, so far it has not made use of it.

Modern Measuring Equipment Needed

This issue prompted the committee chairman to raise the following question: Why can't we learn whether water in Homs is suitable for drinking: It is not enough for us to know that the drinking water is polluted by various factories surrounding the sources of water; we must also have available accurate measuring devices so that we can determine the degree of pollution, in order to learn ways of nullifying, stopping and rendering it harmless to the health and life of the citizens.

Only by this means can we make true progress toward finding solutions to the pollution problem.

This question comes to light: How can equipment like this be obtained?

Naturally, such equipment as this for all of the agencies that we have enumerated as having an interest in the matter of pollution would be impossible, in view of the costs and large financial burdens which they woudl require, The ideal solution, in the committee's view, would be to unify the laboratories that analyze water and create a centralized laboratory that would do the analysis on all samples required for all the provinces of the country, provided that accurate, technical equipment and machinery be supplied to this laboratory, which would be tasked with the accurate analysis of water samples. Instead of each ministry using various types of equipment, one agency could specialize in the importing and use of this equipment.

Can the Committee Arrive at Practical Concepts?

We must question again the role of the People's Council, through the antipollution committee, in finding practical solutions to this worldwide problem, from which the country has begun to suffer, in the same way that any advanced country does due to continual economic and developmental progress.

Mr al-Naqri says that the committee's concern is to discuss the subject of pollution, gather information pertaining to environmental pollution, clarify the degree of danger which it constitutes to the health of man and to the environment, clarify the size of the problem and to prepare all that in a report to be submitted to the council for debate at the beginning of the next legislative session, in the presence of the government, in order to make the necessary recommendations for its implementation.

It is clear from this that the committee's job is not solely to discuss the matter of pollution from a technical perspective, nor to draw up radical solutions for it. This is a delicate tasks requiring specialized studies, especially since the country, as the committee chairman confirmed to us, does not have precise measurements of the size of the pollution problem, nor the degree of danger, due to the lack of modern measuring devices. The committee's job, therefore, is confirmed to making contacts with the committees concerned and studying this problem, which has a strong connection with production and only a general one with man.

However, there is no doubt of the seriousness of the problem of pollution, It is a gravity that concerns all the advanced nations in differing degrees. However, the main issue is not in confirming the gravity, but lies in ascertaining the degree of these dangers, because the authorities concerned are still ignorant of the size of the pollution problem and, according to the words of the committee chairman, none of these agencies have been able to measure the degree of atmospheric pollution over their industrial establishments.

The recommendations, which the anti-pollution committee feels will contribute toward a start in dealing with this problem objectively and seriously, and which will be submitted in a report to the People's Council, are: form a body or a ministry to take on the task of making the environment secure and combatting pollution, and to put an end to the wasteful use of laboratories and measuring devices, through its connection with a central laboratory to supervise all matters pertaining to analyzing samples and measuring degrees of pollution in all the provinces of the country.

We must again emphasize the importance of the role of the Committee to Combat Environmental Pollution and for the necessity of it succeeding in its tasks, especially since pollution has been described as the heir to take the place of famine and plagues. This confirms the degree of its danger to our human society. It suffices to point out that pollution has spread to all aspects of human life, in areas of material, psychological, health and social well-being. This has led to a condition described by students as an environmental crisis, which has caused man to live in constant anxiety and unrest. What increases the distress to which man is subjected is the fact that pollution encompasses food, atmosphere, water and soil, all those things necessary for human life.

The problem is getting worse and is becoming more dangerous. We know that pollution in the environment will be ten times the current amount by the beginning of the Twenty-first Century, if the rate of population growth, industrialization and technological develpment continue on the current levels. If the pollution problem has not yet reached this degree of danger in our country, this does not mean that it is reducing itself or can be ignored. Accordingly, it is the role of the anti-pollution committee to put its recommendations about pollution before the authorities concerned, so that they can deal with ways to ensure that it does not get out of hand and turn into an incurable crisis. In fact, this crisis can be corrected by many steps which have already been taken by several advanced nations. Pollution activities can be reduced by new means and new sources, by putting technology to work to combat pollution, and to conduct serious tests to reprocess pollutants. We could cite numerous examples of that in the fight against pollution, such as creating non-polluting means of transportation, such as electricity and solar energy, the use of non-polluting chemicals in the production of insecticides, which are of no danger to man and will not pollute the environment, and to turn garbage into fuel.

7005
CSO: 5000/4719

REFORESTATION GOALS FOR 1982 FULFILLED

Praia VOZ DI POVO in Portuguese 13 Sep 82 p 2

[Excerpt] The 1982 Reforestation Campaign, promoted by the Ministry of Rural Development Forestation Services, began with the first and heaviest rainfall recorded during the final days of last month. According to data received from the head of the civil-culture division of that ministry, Comrade Pedro Monteiro, the campaign has already practically completed the planting of the 1.5 million trees anticipated for this year.

The campaign was carried out in the best possible manner, with the assistance of the extensive, organized and disciplined cooperation of public entities, public and private organizations, and the outstanding participation of the FARP, the party's armed branch at the service of our people, which reportedly planted 25,292 trees.

The planting of the lowest and most arid areas is almost completed because of the lack of rain in these areas and also because the plants in most of the nurseries have already been prepared for this purpose. However, the work is still going on in the higher and cooler areas by using the few plants which are still left in some nurseries.

This year, the campaign considerably improved the organizational aspect of the various participating organizations, with emphasis on the discipline which the traditional participants in the forestation campaign displayed during this struggle to combat the desertification of our country. Men, women and young people joined hands to make the arid country called "verde" truly green.

8870
CSO: 5000/5

NATION FAILS TO PROTECT TREES

Djibouti LA NATION DE DJIBOUTI in French 9 Sep 82 p 4

> [Text] Trees, essential components of the human environment, are poorly protected in Djibouti.

Trees have traditionally provided for some of the basic needs of the lives of hundreds of millions of the poor of the world. If the conditions for their planting and cultivation are met, these large bushy plants supply provender, nutriments and fuel at the same time, provide shelter, break the force of the winds and have all the advantages of self-protection. Their roots help to deepen and improve the soil, their shade allows for the establishment of a microclimate effect, and finally they extend to plants less blessed by nature part of the protection which they themselves enjoy.

The world has been slow to wake up to the fact that this essential component of the human environment is in the process of rapidly disappearing, above all in Third World countries. It has taken the ravages of the drought in the Sahel and other disasters for public attention to be drawn to the measure in which the large plants have diminished and to the sometimes incalculable consequences that they have brought about.

Unfortunately our country has not been spared, far from it, and one has only to look around to be convinced of the fact:

--Women tear out the main branches of a mesquite. These prunings are done with such severity that it is not unusual to see the tree stripped, white, with an open wound that can cause death.

--Doompalm stands threatened with extinction by the exploitation of their sap, used to make an alcohol highly prized by some.

--Shrubs that have become stunted or shaped like a parasol, indicating extreme overgrazing.

As far as ornamental trees are concerned, the record is rather negative, insofar as trees are pulled out more frequently than they are planted. Thus the existing total number of trees tends to diminish rather than to grow.

In view of the gravity of the situation, the government is undertaking an extensive program of tree planting.

Numerous measures have already been taken.

--The adoption of law No. 243 of 20 April 1982 regulating the felling of green timber in the Republic of Djibouti.

--The observance each year of a national day for tree planting.

--The planting of trees in line along the Ambouli beltway.

Other programs, by no means minor ones, are being developed:

--The project for the protection and development of the Day forest.

--The project for soil conservation (the establishment of antierosion banks, fixation of drifting sands ...).

--The project for the planting of forage shrubs and woods over a 30-hectare area.

But these different measures will only be crowned with success if the entire population participates in them.

9824
CSO: 5000/5823

NINE-YEAR DROUGHT CYCLE PREDICTED

Johannesburg SOWETAN in English 6 Oct 82 p 3

[Editorial]

[Text] ONE IS almost tempted to say we are under some kind of curse, what with whole families losing their everything in shack fires, the ever soaring crime and cost of living, and on top of all that a drought that envelopes most of the land.

The burning of shacks in Katlehong, Germiston is becoming alarming in its regularity. Not too long ago a child was burnt to death in a shack fire in Katlehong. This week another fire destroyed a whole brace of shacks in another yard in the same street. Fortunately nobody was hurt.

There are similar fires making their frequent appearance in other townships as has happened several times in Evaton.

The raging fires besides it is extremely difficult to prescribe solutions to other problems that beset particularly blacks. There is a grave housing shortage, so to say these shacks are a hazard is to forget the plight of thousands who would otherwise be houseless. In a like vein crime seems to be increasing with the nearing of the festive season. Part of this escalation is due to inflation and rising cost of living.

There are fears in places like Soweto that this will be the long hot summer with crime shooting through the roof because of the hundreds of men who can be seen hanging idly around the streets.

Thus we come to the most serious disaster facing the country-drought. There is nothing we can do about a natural phenomenon such as this, except perhaps pray. Reports that we are facing the worst drought in years must mean grief to many.

Even if some of us do not benefit directly if there is sufficient rain about, the indirect effects of a drought-stricken rural area are likely to touch us sorely before long. This comes on top of the ever-increasing cost of living and an inflationary period world-wide which does not seem to show signs of easing up.

Studies at the geography department at the University of the Witwatersrand indicate that the country is at the beginning of a cycle of nine dry years. It sounds almost biblical in its ominous tone.

For the first time since 1978 a number of Transvaal magisterial districts have been categorised "drought stricken".

All these calamities seem to be happening almost at once, which gives credence to the adage that it never rains but pours, a most unfortunate pun under these circumstances.

Under these dreadful circumstances one can only weep for blacks who live in rural areas under unbelievable conditions of deprivation at the best of times and others in impoverished homelands.

There is extreme poverty and blatant exploitation among farm labourers. How these wretches are going to survive a drought that is likely to pinch the pockets of their hard as flint employers is simply ghastly.

As for those impoverished and overcrowded homelands, one can only imagine scenes of waste and suffering equal to war situations if the drought goes on for nine years as predicted.

CSO: 5000/10

BRIEFS

TVL DROUGHT TIGHTENS GRIP--THE drought in some parts of the Transvaal has reached such serious proportions that farmers have not even begun to plough, let alone plant for their next mealie crop. Farmers in the Hendrina area believe this is one of the worst years they have ever had. They have postponed their ploughing because the ground is too dry and anyway it would not be much good to plant in the dry soil. The bean harvest is a little better than last year's however, while the sunflower crop is about the same. Grazing land is parched and veld fires have made the situation more serious. Farmers are hoping desperately that it will rain this week, otherwise their time for planting will be drastically shortened. [Text] [Johannesburg THE CITIZEN in English 5 Oct 82 p 10]

UMZINTO RIVER COMPLETELY DRY--MORE municipalities and town boards in Natal have been obliged to enforce water restrictions because there is no sign of a let-up in the drought in the province. A spokesman for the Umzinto regional water board announced yesterday that a ban on sprinklers and hosepipes was to come into immediate effect at Scottburgh South, Park Rynie, Pennington and at Umzinto. He said that the water in the Umzinto River had dried up completely and that all local municipalities were now drawing their water from the E J Smith Dam. The board had assessed that, unless rain fell shortly, there was only enough water in the dam at present to supply needs for 40 days. He said that the ban on sprinklers and hosepipes would remain in force until further notice. At the beginning of this month the town board of Scottburgh also enforced water restrictions. Two town boards on the Natal north coast, Ballitoville and Umhlali, also said yesterday that the use of sprinklers and hosepipes would be prohibited until further notice. Earlier this week water restrictions were imposed at Kwambononbi in Zululand and at Mtubatuba. [Text][Johannesburg THE CITIZEN in English 7 Oct 82 p 13]

DROUGHT RELIEF IN NATAL--DURBAN--The Utrecht district in Northern Natal has become the first area in the province to apply for drought relief. According to farmers in the area the situation is critical and unless heavy rains fall shortly, they could face disaster. The Agricultural Extension Officer at Cedara, Mr Faan Joubert, said yesterday that farmers in the district had applied for a 75 percent rebate on cattle feed to help them through the drought. He said general subsidies had also been applied for. The drought situation is so critical in Kwabonombi, Zululand, that the local health committee has placed a total ban on the use of hosepipes and sprinklers. A health committee spokesman said there was no alternative because the drought in the area had prevailed for so long. He said most residents were using their bath water to sustain their parched gardens. Other areas in Zululand are about to enforce water restrictions and several health committees have already enforced water clamp down. [Text] [Johannesburg THE CITIZEN in English 6 Oct 82 p 10]

RAIN IN NATAL--Durban--Parts of the Natal South Coast were lashed by a violent thunderstorm accompanied by hail early yesterday. Heavy rain was also recorded in the Natal Inland and this has gone a long way in breaking the crippling drought in the province. The heaviest rainfall was recorded at Port Shepstone where 27 mm fell. The rain was accompanied by hail. Further down the coast 22 mm were recorded at St Michael-s-on-Sea. On the Natal North Coast 12 mm of rain fell at Ballitoville while Chaka's Rock recorded 11 mm. In Northern Natal where rain is badly needed, 20 mm fell in the Utrecht district, bringing the total for this week to 40 mm. The local Farmers' Association has already applied to the Department of Agriculture for drought relief. At Dannhauser, 15 mm was recorded. At Kokstad in East Griqualand, a total rainfall of 16 mm was measured. Durban had five milimetres. Spokesmen for the various agricultural bodies in the province say that the rain this week has partially broken the drought but they are still concerned about areas of KwaZulu where little or no rain has fallen. [Text] [Johannesburg THE CITIZEN in English 15 Oct 82 p 13]

FAMILIES WITHOUT WATER--About 400 families in Phenduka Section, Thokoza, near Alberton, have been without water for the past four weeks and there are fears that residents will be without water for even a longer period. This was confirmed this week by Mr L.G. Mamabolo, chairman of the Thokoza Community Council, who added that for the next twelve to eighteen months there is nothing his council can do to solve the residents problems because of lack of funds. Residents in the area told The Sowetan that for the past four weeks they have been experiencing a water shortage and that they have to walk about a kilometre to get water from nearby Katlehong township. The residents said as a result of the water shortage they could not use their toilets and had to use the veld, risking thugs at night. At times it is difficult to get water from Katlehong as residents there sometimes refuse to give help claiming that at the end of the month they have to pay high water bills. Mr Mamabolo said the council and the East Rand Administration Board were aware of the situation but for the council to solve the problem it had to raise about R4 million which they hoped to achieve by the end of next year. Mr Mamabolo said that the only water reservoir in the township could not cope with the water demands of all the residents in the area. He added that for the past three years the population had increased drastically and to cope up with residents' demands the council has to build another water reservoir. [Text] [Johannesburg SOWETAN in English 14 Oct 82 p 3]

DROUGHT HITS HOMEOWNERS--DURBAN--The severe drought in Natal, which has already crippled many farmers, is now having an effect on the average householder in the province. The Pietermaritzburg town council decided yesterday to impose water restriction because of the low level of the Midmar Dam. Final details of the water restrictions have still to be worked out but it is almost certain that a ban on the use of hosepipes and sprinklers will be enforced until further notice. The situation is being closely watched in Durban, according to a spokesman for the City Engineer's Department. He said that unless rain--"heavy, good rain"--fell shortly it was almost a certainty water restrictions would come into force. On the Natal south coast, water restrictions are already in force at Scottburgh, Umzinto, Pennington and Sezela. On the north coast a complete ban on the use of sprinklers and hosepipes has come into affect at Umhali and Ballitoville. In Zululand water restrictions are in force at Mtutatuba and Kwambonombi. [Text] [Johannesburg THE CITIZEN in English 8 Oct 82 p 14]

CSO: 5000/14

MEETINGS OF SECOND CONSERVATION CONGRESS REPORTED

Committees Proposed

Harare THE HERALD in English 29 Sep 82 p 5

[Text] THE success of rural projects hinges on persuading development agencies involved to work together, the chairman of the Natural Resources Board, Mr Lance Smith, said yesterday.

He told delegates to the three-day second national conservation congress in Harare that it appeared the agencies did not always operate as a team and plans were not always implemented.

"Procedures designed to protect natural resources are sometimes ignored, giving rise to the real fear that in a very short time some of the development could result in destruction," said Mr Smith.

"The board would like to formally propose that--say twice a year--senior policy and decision-making representatives of the various agencies concerned with rural development meet to ensure that development is carried out in unison."

Conservation committees now operated in district council areas.

The country would benefit if conservation committees were set up in resettlement areas, which now had none.

The cost would be minimal compared with the expense of repairing serious conservation damage in the settlements.

"It is a short-sighted policy not to provide this service, and I appeal to those concerned to take action to rectify the omission as a matter of urgency."

Because of the silting crisis, the board had, over the past two years, recommended that construction of three proposed dams be suspended until conservation measures had been effected in catchment areas.

It had been reported from Masvingo province that silting was threatening Bangala Dam, Esquilingwe Weir, Manjerenji Dam and Siya Dam.

In January the board had recieved an authoritative report estimating that more than 96 million tonnes of soil was washed from communal lands into the Sabi River each year.

At that rate it would take about nine years to make a total of 629 000 ha in the area unproductive land.

"The problem should be tackled now to avert a national disaster," Mr Smith said.

Soil erosion would eventually affect irrigation schemes and food production, exposing Zimbabwe to "pressures from hostile food surplus countries".

Dams were silting up at an unacceptable rate in Matabeleland, the Midlands, Manicaland and Mashonaland.

The problem, Mr Smith suggested, had to be tackled simultaneously from many directions in a co-ordinated effort.

"There is need to provide sufficient staff to lay out conservation works and give advice on the management of the natural resources," he said.

"There also needs to be a massive planning exercise based on areas, districts and regions and finally the whole country."

The final report on provision of energy from the proposed Zambezi River hydroelectric schemes would soon be ready for ministerial consideration.

On the much-talked-about DDT use, Mr Smith said: "The British government has agreed to sponsor a six-month project to determine the distribution of DDT residues in the Sebungwe and Gokwe spray areas and downstream rivers flowing tino Lake Kariba.

"One or two scientists will be arriving from the United Kingdom to start the project next month.

"There is a chance that a further survey will be made to determine the biological effects of DDT in the Lake Kariba catchment area.

"A decision on this matter could be made next year."

He hoped efforts would be intensified to plant more trees during this year's National Tree Day and that the trend would gain momentum in future.

The congress continues today and tomorrow with a symposium entitled "Soil and Water 2000".

Peasants Warned of Desert Danger

THE Mayor of Harare, Dr Tizirai Gwata, yesterday warned communal farmers that unless they took strong steps to stop the continual cutting of trees, their farmlands would turn into deserts.

Speaking at the start of the three-day Natural Resources Board congress, the major said he was impressed by the fact that, for the first time, communal farmers were represented, describing this as a step in the right direction.

"This congress is of such importance in the history of Zimbabwe, because, for the first time, there are representatives from the communal areas where a large proportion of our people live.

"Representation from communal lands is vital if the country is to come to grips with the many and varied problems which affect the natural resources in their sphere as in others."

It was vital that the congress informed the representatives from the communal lands of all the problems facing the country, Dr Gwata said.

For many years the communal areas had been neglected, leaving some areas barren, due to the indiscriminate cutting down of trees.

"The natural resources of Zimbabwe are a heritage which we must preserve at all costs for our future generations," he said. "My aldermen and councillors are fully conscious of this need and are endeavouring to foster this consciousness among all the people of Harare."

The Government, he said, had given directives on the tree planting campaign to be run jointly with the city council and other interested groups on December 5--the national Tree Planting Day.

"Harare City Council had made it a point that as many trees as possible were planted on that day throughtout the city and surrounding areas."

Food Essential

Harare THE HERALD in English 30 Sep 82 p 9

[Text] THE success of the three-year Transitional Development Plan hinges on agricultural development, the Secretary for Agriculture, Cde Robbie Mupawese, told the Natural Resources Board's symposium on "Soil and Water in the year 2000".

In a paper on conservation and land resources, Cde Mupawose said: "It is evident if Zimbabwe is to develop as envisaged in Growth with Equity and also in the coming three-year Transitional Development Plan, the agricultural industry must develop to a large extent."

The galloping population growth was being complemented with increased buying power, needing increased and improved products.

But it was questionable whether steps were being taken to ensure that people, either on the land or associated with agriculture, were doing their best to ensure that Zimbabwe would be self-sufficient in food in the next decade.

"Unless serious cognisance is given to food production and conservation of land resources in this decade, we could face a serious situation by the year 2000."

The time was ripe to encourage farmers to grow only crops suited to the ecological regions they lived in and to move away from growing a crop for the sake of having it in the face of adverse conditions.

To emphasise the importance of mechanical conservation measures, Agritex intended to deploy peggers to all district intensive conservation areas to ensure the layout of fields was correct.

The problems of communal livestock were aggravated by the absence of pasture and grazing management; the situation could be improved by destocking.

"It is probably necessary that we declare war on unmanaged grazing. The state of grazing, to say the least, is pathetic. The numbers of livestock carried on some commercial farms, while not causing erosion, are a gross misuse of land."

The use of legumes plus rotational grazing should be regarded as weapons for retaining food self-sufficiency. Irrigation schemes could also be expanded.

Siltation of rivers and dams was the curse posing the biggest threat to agricultural programmes. "We must be aware of the danger that we are inflicting on ourselves," said Cde Mupawose. "Both the farmer and policy-makers must be educated in the importance of good conservation."

Cde Mupawose's speech was read on his behalf by the assistant Agritex director (fields), Cde Peter Pswarayi.

--The ability of the communal areas to absorb more people could hang in the balance unless new rural management techniques are ushered in, the general manager of the Agricultural and Rural Development Authority, Dr Liberty Mhlanga, told the symposium.

Failure to make significant changes in management techniques in use today could plunge the country into a disaster, he said in his paper on development without destruction in peasant agriculture.

Communal areas could not continue to take in any more people and livestock unless something drastic was done to reverse the trend of deterioriation.

Communal farmers could accept the need to destock and work on smaller holdings, from which they can get maximum productivity, provided they were assured of security during droughts.

--Prevailing circumstances and congestion did not allow communal farmers who had been practising conservation for decades to do so any more, Professor Gordon Chavunduka told the symposium.

Wasted Water Will Limit Progress

WATER will eventually be the limiting factor to Zimbabwe's development, the Secretary for Water Resources and Development, Mr Peter Grizic, said yesterday.

Presenting his paper on "Water, the Limiting Factor", at the Natural Resources Board congress, Mr Grizic said it was of paramount importance that conservation of this vital resource be planned now to ensure optimum development.

It had been estimated that the annual run-off from rivers in Zimbabwe was 20 000 million m^3 and this represented almost 7,5 percent of the mean annual run-off.

"The only way we can use it effectively is to store it in dams from which it can be drawn for irrigation purposes during dry spells. For practical purposes at least 8 000 million m^3, representing 3 percent of the mean annual rainfall, can be harnessed."

Zimbabwe was using about 1 500 million m^3 of water a year, of which 88 percent went to the agricultural sector.

"Past trends in the increase in water consumption and population growth indicate that we could use up to 50 percent of our available internal water resources by the turn of the century," he said.

"The overall per capita usage of water in Zimbabwe amounts to approximately 600 litres a day, and this is a reasonable figure for our stage of development."

The success of any Government development plans lay squarely on the attitude adopted by the farmers.

'Zimbabwe Can Lead in Wise Use of Resources'

THE increasingly important role Zimbabwe is now playing in furthering international co-operation on conservation matters was yesterday acknowledged by the chairman of the International Energy Development Corporation, Dr Maurice Strong.

The Canadian conservation expert with 23 honorary degrees said in his keynote address on the second day of the three-day national conservation congress of the Natural Resources Board that it had always been recognised that Zimbabwe had a very special and important place in the world conservation community.

"This congress testifies to the constructive way in which Zimbabwe has now assumed that place," said Dr Strong, who flew into Harare on Tuesday evening.

"Zimbabwe is important in the conservation world, not only because of the rare endowment of natural resources with which your country is blessed, but for the unique opportunity you now have in setting an example of how these resources can be wisely and effectively used in meeting the development aspirations of all Zimbabweans."

The people of Zimbabwe had shown great determination, stamina and resourcefulness in their long struggle for freedom.

The struggle Zimbabwe now faced--that of ensuring that the resources of "this dynamic nation" were developed in a way that would best meet the needs and aspirations of its people--would require the same qualities."

Dr Strong who flew out yesterday, also said the congress, with its focus on soil and water had provided evidence of the degree to which the country recognised that resources were the key to the future.

"And you recognise, too, that conservation must be the ally of development."

Congress Ends

Harare THE HERALD in English 1 Oct 82 p 11

[Text] IT is everyone's duty to promote the dignity of labour and the status of food producers, the Minister of Natural Resources and Tourism, Cde Victoria Chitepo, said yesterday.

Addressing delegates at the end of a three-day second national conservation congress in Harare, Cde Chitepo said the destiny of Zimbabwe and Africa could be influenced by the courageous manner in which farmers prosecuted the struggle for increased food productivity.

Overwhelming support ought to be given to the struggle against hunger and malnutrition in Africa and other parts of the globe facing such problems.

Children should be taught to contribute with their hands as well as thier minds.

"Food is the key to freedom," said Cde Chitepo. "Freedom and agricultural production is our first line of territorial defence.

"Our neglect of the soil and water today will deny that freedom to our children's children in the years to come.

Stream bank cultivation, which had been reported in various provinces, "sadly appears to be on the increase." Steps would be taken to ensure that the cultivation of river banks remained within acceptable limits.

"Women must be involved in the formulation of programmes concerning food production, its distribution and nutrition, with emphasis encompassing primary health care," said Cde Chitepo.

"Since women are the ones who mostly appreciate the irreversible effects of mulnutrition, they should be on vigilance committees at all levels to check malpractices in food distribution and marketing systems."

Delegates told the minister of their deep concern arising from squatters, bandits, land misuse, plus the NRB's "lack of teeth" to carry out its functions effectively.

During debate on specific issues laid down by delegates for general discussion, the NRB retiring chairman, Mr Lance Smith, said: "If we are going to save this country we have got to save the soil. Let us get that message to the Government, on the understanding that in the political world there are tremendous problems to be overcome."

The Secretary for Natural Resources and Tourism, Dr Dexter Chavunduka, said the ministry was trying to find place for the 12 000 people illegally occupying areas under its control.

Poaching

He said poaching in game parks was rife, particularly in the western parts of the country.

The director of Agritex, Mr John Hayward, replying to complaints that extension workers were getting thin on the ground, said most of the available staff were being deployed in resettlement and commercial sectors.

Commercial farmers, because of their level of sophistication, had to find alternative means of helping themselves, though the Govermnent would not forget them completely.

"We have settled 30 000 families on 1,4 million ha, but Government wants 54 000 families resettled a year for the next three years."

To accomplish the exercise, 500 more extension workers were needed at grassroots and more than 100 officer posts should be created.

The president of the Zimbabwe National Farmers' Union, Cde Gary Magadzire, who was attending in his capacity as an NRB member, said it was refreshing to note that the Government had realised the importance of taking master farmers on to resettlement schemes.

He called on Agritex to make a concerted effort to train more communal farmers to become master farmers so that when they go to resettlement schemes the problem of underproduction would be averted.

In reply, Agritex's assistant director (fields), Cde Peter Pswarayi, said: "There are already more than enough trained master farmers to take over all resettlement schemes if necessary."

He argued that for the NRB to be effective, established conservation committees, particularly in commercial areas bordering rural areas, should involve communal farmers in their deliberations.

"There should be more communication between farmers and communal people," he said.

An observer from Vuti, Karoi, slammed the Department of National Parks and Wildlife Management for failing to keep a check on dangerous game in their care.

He said that in the last two months, six lions--which he termed "real squatters"--left a game reserve and killed 12 livestock in Vuti.

"People looking after these squatters should come and remove them," he said.

Thanking the NRB for inviting him to attend the congress, Cde Dipholo K. P. Dipholo, secretary of Botswana's Agricultural Resources Board, said certain border issues could be tackled jointly by the two governments.

He said there was a strong feeling in his country that ideas should be shared on the problem of countering poaching on the border as well as the problem of border fires.

CSO: 5000/11

BRIEFS

SEARCH FOR WATER--THE Government plans to sink at least 55 new boreholes in Mashonaland Central province during this financial year, the Deputy Minister of Water Resources and Development, Cde Joseph Kaparadza, said yesterday. Cde Kaparadza told a meeting of district council chairmen, district administrators and senior local government officials from the province that his ministry would sink 46 new boreholes in the Guruve and Mazarambani district council areas. The other nine would be sunk in other districts. "Due to the drought in certain parts of the country my ministry has a backlog of boreholes to be rehabilitated and drilled. I would advise that all the 11 drilling rigs in Mashonaland are busy rehabilitating, cleaning and sinking new boreholes. Rushinga has two; Pfura two, and an air-drilling rig will be used in the Guruve and Mazarambani districts," he said. Tests for water resources to supply piped water to 463 rural service and district centres were under way. The schemes, funded by the African Development Bank, would be constructed by the District Development Fund. "As part of the Government's declared policy, priority was being given to the development of suitable water supplies in the communal areas." Meanwhile, the ministry was working on a programme to supply clean water to a number of villages in the province. Water would be supplied to "a concentration of villages" with a high population density. [Text] [Harare THE HERALD in English 30 Sep 82 p 1]

CSO: 5000/11

BRIEFS

MINES CAUSE SALTY WATER--The Alsace Potassium Mines (MDPA) are responsible for an average of 17 percent of the salinity of the water used by truck farmers in the western Netherlands (Westland), according to the conclusions of three scientific experts appointed by the Rotterdam Court. These independent experts were named to handle the suit which three Dutch truck farmers, victims of pollution of the Rhine, have brought against the MDPA since 1974. The experts presented their report to the Rotterdam Court, which in April 1980 entrusted them with the task of determining to what extent the salinity of the underground water in the Westland region came from the infiltration of sea water, the Rhine in general or only the MDPA. They were also to determine the amount of the damage caused. The losses suffered by Westland farmers are put at 45 million florins (115 million French francs) a year, but, the report adds, during dry years such as 1976, damage to the market gardeners is much greater. The Rotterdam Court will now have to decide whether the MDPA is committing an illegal act in dumping 6 million tons of salt into the Rhine a year. [Text] [Paris LES ECHOS in French 7 Sep 82 p 8] 11,464

CSO: 5000/2502

AIR POLLUTION BLAMED FOR DESTRUCTION OF FOREST ACREAGE

Helsinki HELSINGIN SANOMAT in Finnish 25 Aug 82 p 13

[Article: "Air Pollution Researchers at Oulu: Pollution Responsible for Destruction of 20,000 Hectares of Forest in Finland"]

[Text] Air pollutants, consisting mainly of sulfur, have already destroyed 20,000 hectares of forest in Finland. According to best estimates, the retardation in the growth rate of forest trees accounts for an annual loss of 120,000 cubic meters of wood. The growth losses to date exceed a million cubic meters. Dr. Satu Huttunen of the botanical establishment at the University of Oulu predicts that this amount will double by the middle of the present decade.

Dr Huttunen is in charge of arrangements at an international seminar studying the effects of international air pollutants that opened in Oulu on 24 August. Subjects to be discussed at the meeting include the effects of acid rain on forests, the pollutant tolerances of forest trees, and the establishing of international criteria for air quality. Over one hundred experts from various parts of the world are attending the meeting.

According to Huttunen, adequate information already exists for the establishing of emission norms for industry and energy production. "Political will is still lacking, however, and quite frequently there still prevails the attitude of 'go look in Central Europe.'" Huttunen says that in many respects the situation has improved in the industrial centers of Central Europe, while in Finland the progress has been in a less desireable direction.

Problems Still Remain Local

In Finland the air pollution problems are of a very local nature. The worst instances in Huttunen's view from the standpoint of the forests and other vegetation are the direct, sporadic discharges of pollutants. Evidence of those are evident in northern Finland, particularly at Oulu and Kemi. Quite large discharges whose effect can be noted in the natural surroundings have been measured even in summer 1982 at Oulu.

According to a study recently completed at Oulu University botanical establishment, much mercury and cadmium have also been found in the mushrooms at the Oulu center. Nearly one third of the fancy grade of mushrooms exceeded the levels recommended as edible by the Foodstuffs Administration. The largest mercury content analyses exceeded the recommended level eight-fold. The study indicates that the mushrooms at Oulu contain the same amounts of the heavy metals as those at Helsinki.

Southern Finland has a problem also with sulfurous rainfall originating in Central Europe. According to an acidity study conducted during summer 1982 in Uudenmaanlaani, one half of the atmospheric sulfur in that province originates outside of Finland.

In addition to the effects on forest growth, the acid rain has an effect on bodies of water and on the living organisms that they sustain. It is estimated that there are over one thousand lakes in Finland in which the process of acidification has already begun. In due time the acidity in a lake will kill all living things in it.

Regulations Lacking

The largest amount of air-polluting substances are produced in the forest industry and in the production of energy. Regulations as to the allowable amount of each pollutant that may be discharged into the atmosphere do not exist. The researchers consider the regulating of sulfur-bearing discharges to be the most urgent. Next in line are the oxides of nitrogen followed by lead.

According to Chief Olli Ojala of the Interior Ministry's Environmental Protection Division, Finland has health-concern recommendations that are based mainly only on the results of animal experiments. However, plants are much more sensitive to air pollution.

Ojala feels that the most important way of preventing air pollution is by the establishing of norms for industrial emissions.

The first air quality law in Finland will go into effect on 1 October 1982. Huttunen feels that the carrying out of the law depends to a great extent on the types of regulations concerning industrial emissions the law is to contain. The researchers find little hope for improvement in regard to stringency of the regulations.

Combined Effects Yet Unknown

"Air pollution involves the question of the combined effects of many substances. The problem is that we usually know the effect of only one substance under specific conditions," says lecturer Edwin Donaubauer of the University of Vienna.

The effects of the pollutants can vary quite greatly in different countries. For instance, the forests in Finland are very sensitive to pollutants. The differing problems and the different effects of the pollutants make difficult the drafting of international agreements concerning the maximum limts of pollutants.

Donnaubauer feels that good results have already been attained by means of limitations in Central Europe. Irreversible errors have been committed, however.

Researchers in Central Europe are concerned about the disappearance of certain species of pine and spruce.

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CSO: 5000/2158

REFORM URGED FOR PROCESS OF ENVIRONMENTAL IMPACT STUDIES

Paris LE MONDE in French 2 Sep 82 p 27

[Article by Marc Ambroise-Rendu]

[Text] In the course of recent weeks, administrative courts have revoked authorizations granted for equipment projects because of the "lack of any adequate impact study." Attention has thus been drawn to this relatively recent procedure, still little known to the public and, if one is to believe the judges, poorly utilized by developers. And yet, it has been in force for four and a half years. During regional environmental surveys, the ineffectiveness of impact studies was constantly stressed. Several experts have proposed their reform.

It was the nature protection law, unanimously passed in 1976, that introduced a practice conceived in the United States a few years previously into France. It is an ingenious idea. In order to force promoters and developers to preserve the environment, they must attach an impact study to their project. The study is a document describing the original condition of the site, modifications made by the development, variations proposed and measures aimed at attenuating any foreseeable negative effects.

These documents are theoretically submitted to fourfold control: public opinion at the time of the survey; that of the agencies involved; the control of the Ministry of the Environment, which can seize the dossier; and that of the courts before which the impact studies can be contested. As then Minister of Environment Michel d'Ornano said in 1977, the completion of impact studies was equivalent to "a peaceful revolution." Members of Parliament, authorities and association officials thought that henceforth, the requirements of the environment would be imposed on all development decisions, even to the point of causing some to be abandoned.

Today, however, it is time to open our eyes. The promised revolution has been so "peaceful" that it has gone unnoticed. One would have difficulty citing a single proposed plant, highway, reallocation of land, electric lines or subdivision given up after a contradictory examination because it was "too destructive of the environment."

That is true, but the requirement of the preliminary impact study discourages "ecologically unsound" projects ahead of time. The procedure happens first, by dissuasion and its effects are consequently invisible.

The argument is not without interest, but it will not deceive those with a good memory and who have long followed major private and public projects: Winter resorts, electric lines, power plants, port for pleasure boats, dams and canals can all be postponed, moved or modified, but none has been given up for good. The "touched up" dossiers, as they are called in government, remain in a drawer somewhere and emerge sooner or later, like worms out of a can.

One More Formality

Where is the rub? Certainly not in the number of studies? Developers and promoters present some 4,000 a year. More impact studies have been completed in France in four and a half years than in the United States in twelve years. Since 1978, the date when they truly began to be applied, the field of action has been expanded. Quarries extending over 5 hectares, projects affecting humid areas, the new ski resorts and most ZAC's (concerted development areas) have been subjected to impact studies.

Actually, impact studies have become just one more formality, an additional opportunity to produce paperwork. All of France's engineers, developers and promoters have been ingenious in handling a requirement that initially terrified them. They bent over backwards to prevent passage of the law in 1976, then tried for 18 months to prevent publication of the orders of application. Since that time, "they have lived with it," as they say, and have observed that the new requirement is nothing but a paper tiger.

First of all, the impact studies are often reduced to practically nothing because there is little knowledge of the natural environment. One might have expected for university ecologists to be mobilized, for a corps of experts to be organized. But in fact, both private and public consulting firms, those working for manufacturers, equipment and agriculture, but also the departments of the highway companies, the EDF [French Electric (Power) Company] and the AEC [Atomic Energy Commission], the planners and architects: All have started to turn out ecology like Jourdain turned out prose. The French Association of Ecological Engineers has major difficulties assembling 120 professionals.

The result is the poverty of the documents presented, particularly those accompanying proposed subdivisions, clearings, the allocation of land and the establishment of industrial stock farms. On the other hand, as a result of being constantly badgered, the builders of highways, chemical plants and electric power plants are beginning to put out decent projects.

But they must still be examined, judged and inspected. The public and organizations have access to impact studies only at the time of public inquiries, the unpublicized nature of which is well-known. They are so "discreet," in fact, that the prime minister himself felt the need recently to reform their planning (see LE MONDE, 9 July and 19 August). Furthermore, the average mortal has no way of evaluating how scientific the statements contained in the plans are. That is why even the "hardline" ecologists have, for the most part, given up using the weapon of the impact studies. They do not even think about asking the minister of the environment to seize the plans for a project. Only about 20 organizations or private parties use this right every year.

The government administration authorizing the completion of developments thus remains the sole judge and one has difficulty seeing how a departmental official responsible for transportation, city planning, agriculture or industry would reject an impact study concocted by his very own offices. For years, regional environmental representatives were not even informed about such dossiers. Even today, for lack of personnel, they cannot examine all of them. As for the 25 experts at the central environmental agency in Paris, they oversee some 20 major projects a year, no more.

There remain appeals to administrative courts. Because of the lack of opposing surveys, the latter generally evaluate only the regularity of the procedure and not the scientific validity of the study. One statistic drawn up for 1978 and 1979[1] shows only 43 cases. Two resulted in cancellation of projects, one to a temporary suspension and five to a postponement of execution. Even in this case, the courts are so slow that the project was either finished or too far ahead for the court's decision to be carried out. Whatever the case, the Council of State, which handles appeals, systematically rules against those alleging the inadequacy of impact studies.

Appeal to Experts

Inoperative, the impact studies procedure must therefore be changed. This is the opinion of the French Association of Ecological Engineers (AFIE)[2] and of a number of experts who have recently published articles on the problem.[3] Their suggestions mainly agree. It is first of all necessary to modify the range of application of the impact studies. They must be simplified for a host of smaller projects, but made obligatory for others now escaping the requirement: the development of government forests, ground occupancy plans, regional development plans, the development of hydrographic basins, the national plan for high-tension lines, highways, and so on. It is not by "spicing up" the projects to make them acceptable, but rather, by examining the overall picture that one will truly be able to evaluate the real impact of projects.

It is also necessary to improve the quality of the studies by appealing more to experts on ecology. One should at least take advantage of the fund of knowledge build up as a result of the 15,000 studies already completed. In the United States, the list of impact studies on microfilm is available. In France, it is practically impossible to gain access to the studies or even to obtain any exhaustive list. And yet, there is a data bank that is growing every day, without benefiting anyone.

Finally, it appears indispensable to organize some supervision of studies worthy of the name, first of all, by the public, ensuring open information about the dossiers and increasing the number of public and/or dissenting hearings. Then there must be control by the government, with the establishment within the ministry of an independent, competent body to judge the validity of the plans.

Many other improvements in detail could be made in the procedure, but curiously enough, no official proposed reform of impact studies has yet been put forth. The lawmakers in 1976 had a good inspiration and it is time to make it operational, but do people really want it?

FOOTNOTES

1. "Impact Studies on the Environment. State of Jurisprudence 1977-1979." Ministry of the Environment.

2. "For a Policy of Technical and Structural Proposals on the Environment." AFIE, 26 Rue Montmartre, 75001 Paris.

3. "Impact Studies. Critical and Prospective Analysis," by Max Falque, SOMI [expansion unknown], Le Tholonet, hamlet of Palette, 13100 Aix-en-Provence.

   "Impact Studies on the Environment: Revolution or Evolution in the Development of the Territory?" Doctoral thesis by Serge Hebrard, 16 Rue Gabriel-Peri, La Garenne-Colombes.

11,464
CSO: 5000/2502

STUDY REVEALS QUALITY OF TAP WATER IN 1981

Paris L'HUMANITE in French 1 Sep 82 p 10

[Article by Jean-Claude Morancais: "Is Tap Water Safe?"]

[Text] Water of poor, even dangerous, quality is provided for public consumption in 4,500 out of the 36,000 communes in our country. Everyone knows that "that's life," but it is one more reason to take a serious look at the results of studies made by the Ministry of Health on "The Quality of Water in 1981" as made public on 27 May.

These results had previously been kept secret. Today, whether in the Ministry of Health or Environment, officials say they have "absolutely no qualms about making them public," for they finally believe that citizens and consumers are adults who deserve to be fully informed.

This balance sheet has just been published and analyzed in detail, commune by commune, in issue 780 (September) of SCIENCE ET VIE. The publication reveals the very long list of 4,500 communes where the so-called "drinking" water is not satisfactory, inasmuch as it is sometimes dangerous for small children, old people, the sick and pregnant women.

600,000 Persons

On the whole, the situation is as follows, based on official statistics: Out of the 51 million French people whose drinking water is inspected, 20 million have water beyond reproach, particularly in the large cities. The remaining 58 percent use water ranging from the best to the worst.

For example, 28 million people drink water whose safety was revealed by sampling to be "not satisfactory." The worst was the sad "privilege" of 600,000 persons, 1.3 percent of the total population, living in the 4,500 communes in question.

These are the consumers directly concerned by the SCIENCE ET VIE report. However, this figure makes the problem posed relative and shows the extent of the efforts remaining to be made in order to solve it in the interest of the general health. This is especially true since a million persons have water that is not even inspected, either because they are not connected to a public source or because the distribution unit serving them is not inspected.

Another element allowing one to be vigilant without giving way to panic: In the Ministry of Health as well as the Ministry of Environment, it is stated that public statistics are exaggerated because they show the situation in 1981. "Substantial improvements have since been made as the result of the action by Minister of Health Jack Ralite with respect to laboratories, distribution companies and above all, the local communities that are primarily responsible for the quality of water."

One must also note that the statistical elements resulting from three types of analyses, themselves subdivided into "physical" (color, odor, taste), "chemical" (amount of ammonia, nitrites, chlorides, sulfates, iron, and so on) and "microbiological" (listing of pathogenic germs such as coliiformes or fecal streptococci) parameters, are given only in terms of "thresholds." For obvious safety reasons, these thresholds were deliberately set as low as possible by lawmakers. "That is why some of these thresholds are attained and even exceeded without necessarily posing a danger to the people, but it is one fact that must warn us," according to Leger, technical adviser in charge of public health prevention problems in the office of Minister Jack Ralite.

It is all a matter of proportions, dosages, for water is a living substance. Too "pure" or too poor in mineral salts, it is just as dangerous, in the case of prolonged use, as water extremely polluted by organic or chemical matters.

High-Risk Campaign

Another error consists of believing that it is in rural areas that drinking water is the best. It is precisely the opposite. Some 83 percent of the cases of pollution noted in 4,500 communes are from rural areas with fewer than 500 inhabitants, which explains the figure of the 6,000 persons involved. Geographically speaking, this is the case of the rural areas of Savoie, Vosges, the Centre region, Loire and Poitou-Charentes. "Wherever there are many grain crops making intensive use of chemical fertilizers," Jean-Claude Caillot, water specialist and technical adviser in the Ministry of the Environment, states.

It is the nitrates, substances suspected of being highly carcinogenic, that are of greatest concern, whence the harsh standard of 50 milligrams permissible per liter of water just set by the EEC and to be applied by all member countries by 1985 at the latest.

Another aspect is the effect on health of consuming poor-quality water, an effect difficult to measure. After 3 months incubation, how is one to know with certainty whether a given case of viral hepatitis results from the absorption of polluted water or other causes? That is why only these figures are given by the Ministry of Health. From 1972 to 1980, the ministry officially recorded only 33 accidents of hydric origin causing some 1,000 cases of gastroenteritis, but not a single case of hepatitis for the reasons given above.

Measures Planned

The fact remains that improvements are highly desirable and possible. Measures are now being worked out jointly by the two ministries. An interministerial circular will encourage the establishment of new perimeters to protect sources and therefore intakes. The results of analyses will systematically be posted in city halls. Financial means will be made available so that small communes will be able to apply these recommendations or regulations. The latter are urged to join together to face any incident and the costly maintenance of facilities and distribution systems, often vast in rural areas, more effectively. A "national reference system" will be set up and should result in a "more scientific" surveillance of water quality. Staffs will be increased in size. New denitrification techniques are being tried near Morlaix in Brittany. The Ministry of Environment hopes that a certificate of professional aptitude (CAP) and a professional certificate (BP) will be created in waterworks.

For the time being, there is but one type of professional training (a matter of concern) given "in-house" by the two major private distribution companies: the Lyon Water Company and the General Water Company. Finally, in close connection with agricultural organizations and the Ministry of Agriculture, studies will be completed to try to modify agricultural techniques in the direction of less intensive use of nitrogen fertilizers. The simple fact of turning on a faucet to have truly safe water involves complex circuits, as one can see.

Prime Target: Nitrates

Of all the water pollutants, the one posing the most problems at the present time is the proportion of nitrates it contains. Under 55 mg per liter, the water still passes, but above that amount, there is some risk, particularly the appearance of a disease disturbing the normal oxygenation of the blood: methaemoglobinaemia, a kind of blue sickness of nursing infants.

On the "Hit Parade" of the communes with the most nitrates, we placed those in which average doses go dangerously beyond 100 mg per liter. Unfortunately, this does not mean that there are no problems in many other departments where the average proportion varies from 50 to 100 mg per liter, far above European standards set at 50 mg/liter.

Ariege: Le Carlaret. Aisne: Mons-en-Laonnais. Eure-et-Loir: Beauvilliers, Bouglainval, Pierre-Bois-Richeux, Tremblay-le-Vicomte, Marcheville. Finistere: Cleder, Kergloff, Plouzevede, Roscoff. Indre: Ruffec-la-Roche. Indre-et-Loire: Saint-Laurent-de-Lin. Loiret: Bouzonville-en-Beauce, Treille-en-Gatinais. Maine-et-Loire: Doue-la-Fontaine. Moselle: Liocourt. Nord: Beauvais-en-Cambresis. Oise: Montgerain, Raray, Menevillers, Villiers-Vicomte. Orne: Fel. Pas-de-Calais: Arleux-en-Gohelle, Noyelles-sous-Lens. Seine-et-Marne: Changis, Plessy-Placy. Somme: Morlancourt-Chipilly. Essonne: La Foret-le-Roi. These 20 communes present major risks, according to analyses made in 1981.

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GROUP ACCUSES FIRM OF DUMPING CONTAMINATED WASTE IN MEUSE

Paris L'HUMANITE in French 2 Sep 82 p 12

[Article by Jean-Claude Morancais: "Dangerous Sludge"]

[Text] The Ecological Nature Conservation Group in Lorraine (GECNAL) filed a complaint at the beginning of August with the Saint-Mihiel (Meuse) gendarmerie against the Marchon-France Company, which makes cosmetics. GECNAL accuses the firm of dumping some 50 tons of chemical sludge in a private area, thus risking long-range pollution of the Meuse.

Neither the municipality of Saint-Mihiel, headed by RPR mayor and vice president of the General Council of Meuse, Bailleux, nor the owner of the private sewer, Huot, decided not to follow up the matter, in the opinion that they had been taken advantage of.

Actually, a verbal agreement (of no legal value) was reportedly made between the municipality of Saint-Mihiel and the Marchon-France Company so that it could dump its waste in a supervised public sewer as soon as it were set up in the commune some 10 years ago. However, the dumping of the 50 tons in question took place in a private sewer belonging to the Huot Company, which claims that it was not even notified, which it finds "discourteous."

The Marchon-France Company "admits its dumpings of chemical products" but states that thanks to a diluter, "Dykalyte," "they present no danger because they are turned into mud."

This is questioned by the ecological group, which has taken photos and made samplings and very day after the dumping. The samples were analyzed by the CNRS [National Center for Scientific Research]. That same day, GECNAL filed its complaint through one of its officials, Fousnaquer. The complaint was filed with the Saint-Mihiel gendarmerie, which immediately began its investigation.

Shortly thereafter, the gendarmerie received the results of analyses reportedly proving the existence of traces of toxic products. This does not seem to be disputed by Marchon-France officials, who say that "the danger level has not been reached."

Ecologists immediately dispute this claim, deeming that the products in question are dangerous because they are "fatty acids, phenol, benzene and toluene, with the latter being very volatile." They fear that even if the toluene gradually evaporates, the same will not be true of other products, which could, they say, penetrate the very calcareous soil at the site and in a few months, cause pollution of the Meuse.

Moreover, they base their complain filed with the attorney general of Bar-le-Duc on the law of 11 July 1976 prohibiting the dumping of harmful products in the open. That is where things stand at the moment.

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Worldwide Report

ENVIRONMENTAL QUALITY

No. 375

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2 November 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 375

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DACCA MEET DISCUSSES MEASURES AGAINST SEA POLLUTION

Dacca THE NEW NATION in English 10 Oct 82 p 8

[Text] CHITTAGONG BUREAU

October 9: Speakers at a discussion meeting held in observance of Fifth World Maritime Day sought global cooperation to keep the sea free from pollution with a view to maintain continuous human prosperity and stressed self consciousness of seafarers in this connection.

The discussion meet on 'Global cooperation to protect sea pollution', was held this morning at Seamens Hostel at Halishar. The function was chaired by Captain M. Shafi, Director General department of shipping. The meet was also addressed among other by Mr A.K.M. Kamaluddin Chowdhury, Secretary, Ministry of Ports, Shipping and IWT, Mr Halhauzen Resident Representative of United Nations Development Programme, Captain Islam and Mr A.B.M. Tabarakullah.

The speakers emphasised effective pollution control to protect the untapped sea resources scattered throughout the globe. The pollution has yet not reached an alarming stage in the country but we must take necessary steps to halt pollution with awareness.

If the rivers and sea of the country become polluted it ~~will be~~ a futile task to go for anti-pollution measures at a huge cost, the speakers opined. Moreover the pollution will reduce the fish and other marine resources, they said.

Expressing concern at unabated discharging of cargo sweeping waste and engine oil wastes from foreign ships at our ports, the speakers called upon the government to enact laws to prevent such discharging. There are provisions for fines at foreign ports for such unlawful discharges, the speakers added.

Stressing training for seamen in this regard speakers opined that discharge of crude oil and vessel fuel is the main source of sea pollution.

Giving a graphical sketch they said discharging of such oil was 21 lakh gallons per year in the seventies, it was reduced to 15 lakh gallons in the eighties though the total oil cargo at present shot up to 15 crore tons from 54 lakh tons in the fifties.

Mr Kamaluddin Chowdhury in his speech said sea is our part of life, but lamented that yet we are unable to tap its resources and are ignorant about its many aspects.

He deplored the reduction of Bangladesh sailors abroad for non-skillness. Mr. Chowdhury called upon the relevant authorities to impart uptodate training to seamen to match the global seas. He lauded, UNDP efforts launched to train seamen.

CSO: 5000/7003

CLASH BETWEEN MINING INDUSTRY, CONSERVATIONISTS FORESEEN

Christchurch THE PRESS in English 30 Sep 82 p 16

[Article by Oliver Riddell]

[Text] One industry from which New Zealand is expecting to profit in the next 20 years, and to secure much of its energy supplies, is mining. This has resulted in an increase in applications for exploration and prospecting licences. The mining licensing system is bursting at the seams trying to cope.

In the background, but dominating the actions of everyone involved in the licensing process, is looming a major confrontation between developers and conservationists. This struggle has existed for many years. It has been slow to develop here because so much of New Zealand was still unspoiled, and because New Zealand's mineral resources are small by international standards. Accordingly they have been slow to attract international investment in the face of competition from larger mineral deposits.

The surge in gold prices three years ago, along with predicted shortages world wide in some minerals in 20 years time, have changed attitudes towards investing in New Zealand minerals. Allied to this is the keenness of the New Zealand Government to develop the coal reserves for energy production and for export.

Already on the West Coast and at Coromandel conservationists and farmers have confronted the Government and multi-national mineral giants. Most of the struggle so far has been about rights to explore and prospect; the heat will get really fierce when the struggle is about extraction. As native timber was the main conservation issue of the 1970s, and water looks likely to be the major issue in the 1980s, so minerals may be the major issue for the 1990s.

Mining is not a field in which the opposing sides have much goodwill for each other. At a conference of the Australasian Institute of Mining and Metallurgy in Wellington, one leading mining figure observed sourly that the mining industry was suffering from undue public attention. Amended mining legislation last year at least provided clearer ground rules for miners and their opponents to contest applications for exploration and prospecting licences; when the mining licence applications begin the Government will need to have decided what rules are to apply there too.

The filling in the mining sandwich is the Mines Division of the Ministry of Energy. Speaker after speaker at the conference made claims about what the Mines Division was doing wrong, and how it could do the right thing. These claims almost all cancelled each other out and were mutually exclusive. At the same time, Mines Division staff spoke of pressure of work and the conflicting expectations people had of them.

The mining industry wants the Mines Division to become its advocate — to the Government, among other officials, and in promoting mining to target groups of the public through special publications. The Mines Division has often been accused over the years of doing this anyway, but its more even-handed approach in recent years has muted criticism from conservationists. However, the result has been that some mining interests have come to see the Mines Division, or at least some of its staff, as opponents to mining whose antagonism needs to be overcome.

The Mines Division is in a bind. It not only has to deal with the competing interests of miners and conservationists, as part of its statutory functions, but it is also New Zealand's biggest miner itself. This last function is a further source of conflict with both other miners and conservationists.

Law changes will be sought by the mining industry to remedy not only what it sees as emerging defects in the amended mining legislation, but also to reduce the impact of some of the effects of the legislation which are frustrating mining development. Miners want a sort of mining National Development Act, which will shorten the procedures needed before mining, and are confident of Government support.

Miners expect to work together a lot more closely in the future in a public relations campaign. This is to convince the public of the merits of mining, and so will aim to educate the public generally as well as influence specific groups of people over specific development projects.

Mining will become much more political in the future. This was the clear message from the conference, and is a result of the increasing confidence the mining companies feel in themselves, their product and their future in New Zealand.

CSO: 5000/9080

BRIEFS

HYDROPOWER PROJECTS--Environmental groups and acclimatisation societies must be fully informed of intentions to develop hydroelectric power schemes in future, the Minister of Energy, Mr Birch, told the annual conference of the Electrical Supply Authorities Association yesterday. A local supply authority wanting to develop a scheme must send to the Commission for the Environment, the regional water board and the territorial local authority all the information relevant to the proposal. [Excerpt] [Auckland THE NEW ZEALAND HERALD in English 23 Sep 82 p 1]

CSO: 5000/9080

PEOPLE'S REPUBLIC OF CHINA

SOURCES OF MERCURY CONTAMINATION EXAMINED

Beijing HUANJING KEXUE XUEBAO [JOURNAL OF ENVIRONMENTAL SCIENCES] in Chinese No 3, Sep 82 pp 229-240

[Article by Hu Gualian [5170 0948 1670]: "Transformation and Migration of Mercury in Geological Pollution Sources"]

[Summary] Mercury contamination caused by apparent increase of Hg content in soil, air, and near-surface ambient air has been observed through mercury-enriched rocks and ore bodies even at a depth of 300 meters or beneath a thick, up to 160 meters, overburden. This paper briefly discusses the relation between transformation-migration process of mercury-bearing sulphides and pollution sources. Mercury exists in various chemical forms in geological bodies. However, it has been proved, under both laboratory and natural conditions, that it can transform into a gaseous phase and in a soluble form migrate through porous rocks and fractures. According to results from experiments and the theory of electrochemical dissolution of minerals, it is further deducted that transformation-migration of mercury in sulphides is related to mercury content and its form, mineral association, chemical property and activity of underground water, and development of migration channels. Soluble mercury would migrate in long distance via the form of a stable complex under existence of high level chloride in underground water. By means of continuous accumulation, organic substances, ferric oxide, manganese bionoxides, and clay minerals in soils all exert an important influence on supergene enrichment of mercury in the upper layer of soil profiles.

6248
CSO: 5000/4105

RESULTS OF STUDY OF WASTEWATER-IRRIGATED SOIL RELEASED

Beijing HUANJING KEXUE XUEBAO [JOURNAL OF ENVIRONMENTAL SCIENCES] in Chinese No 3, Sep 82 pp 266-269

[Article by Chan Tao [7115 3447] et al., of Research Institute of Forestry and Pedology, Chinese Academy of Sciences: "Study on Cadmium Forms in Wastewater-Irrigated Soil With $^{115+115m}Cd$"]

[Summary] Experimental results were obtained by using tracer of $^{115+115m}Cd$ after the method of Yoji Sonoda and Silvera, D.J. Soil samples were collected at 2 wastewater irrigated areas, one being acid meadow brown soil in Shenyang, and the other solonized light meadow soil in Tianjin. Experimental results are summarized as follows: (1) 54 to 74 percent Cd exists in exchangeable form in these soils; (2) the rate of alkali-soluble form is increasing and the rate of exchangeable form is decreasing with increase of pH. This is in accord with results of Yoji Sonoda; (3) for extraction of available form of Cd in alkaline soil, a 0.005M solution of DTPA is preferred, because extraction is not complete with 0.1N HCl by Yoji Sonoda.

6248
CSO: 5000/4105

OPPOSITION PARTY RAPS GOVERNMENT OVER INACTION ON LITTER

Nassau THE TRIBUNE in English 22 Sep 82 p 1

[Article by Marcia Bethell]

[Text] **THREE GOVERNMENT Ministers were heavily criticised yesterday by members of the FNM for allowing the area under the bridge to become an 'unsanitary health hazard" and for also ignoring suggestions made by the FNM for a clean-up plan for the area.**

Three members of the opposition party, including the leader Kendal Isaacs, Pierre Dupuch and Jimmy Knowles made a tour of the area yesterday afternoon noting the unsighly mess and talked with some of the fruit vendors and fishmongers in the area. They condemned the Minister of Works, Loftus Roker, the Minister of Health, Livingstone Coakely and Minister of Fisheries George Smith, for allowing the area to become a "disgrace" for tourists as well as Bahamians.

Pierre Dupuch, FNM representative for Shirlea and shadow Minister for Health, said yesterday that shortly after being elected to the House of Assembly he wrote a letter to Mr Roker regarding the unsightly and unhealthy conditions which exist at the bridge and surrounding area.

In Mr Dupuch's letter, dated June 30th, 1982, he pointed out to Mr Roker that Paradise Island Bridge is the "gateway to our largest tourist resort, namely Paradise Island."

"I am sure," he wrote," that you appreciate the importance of keeping our island, and particularly our showcase areas, clean."

Mr Dupuch suggested to Mr Roker that the empty conch shells which litter the docks and sea area be moved. That proper garbage receptacles be placed strategically in the area so that garbage can be secured for removal on a daily basis by garbage trucks.

He also suggested that proper tables (either wood, cement or tile) be constructed with running water so that the fishermen and vendors could sell their produce in sanitary, presentable and convenient surroundings.

Also, that toilet facilities for use by the general public, be constructed under the bridge and that derelict boats be removed from the area.

In regards to the reclaimed area just east of the bridge, Mr Dupuch suggested to Mr Roker that grass and other Bahamian trees and flowers be planted there, "thus creating a park where tourists and Bahamians alike can enjoy the true beauty of the Bahamas."

But yesterday Mr Dupuch said that it was obvious that Mr Roker ignored both his letter and his suggestions.

"From all angles this area is a total disgrace. This area is filthy, the garbage and stench attracts rats and flies, and besides creating a health hazzard for Bahamians it is also an eyesore for tourists" Mr Dupuch said.

Mr Isaacs, who said that yesterday was the first time he had taken a good look at the area, said that the conditions left much to be desired.

"We will continue to take action against this until something is done," he said. "This area is not the only unsightly area in New Providence. Bay Street is almost as bad," he said.

Mr Isaacs said the FNM will continue to write to the Ministers responsible for cleaning up the area and will also bring it up in the House of Assembly.

"And through our combined efforts with the Press we hope to shame the government into doing something about it. We will also be making regular tours such as this one in the future," he said.

The FNM representative for Clarence Town and Shadow Minister for Agriculture and Fisheries, James Knowles, said that on two occasions in the House of Assembly he had urged that efforts be made to clean up the area.

"I suggested to the Minister of Fisheries, George Smith, that proper facilities be provided for the vendors and fishmongers in the area and that these facilities be maintained on a regular, orderly basis. This will make the whole area appear more neat and tidy and make it more of an attraction to tourists," he said.

Mr Knowles said that the lack of facilities on the dock contributes to the disorderly appearance "of the area and the unhygienic conditions."

Mr Knowles said that he also invited Mr Smith to look into landscaping the reclaimed land to the east of the bridge, "so that it would look more attractive and not be a depository for garbage."

"I call upon the Ministers of Health, Fisheries and Works to immediately remedy the unsanitary conditions in this area in the interest of the tourist and the health of the Bahamian people," Mr Knowles said.

"This cannot be allowed to continue," he said. "God forbid that we should ever hear the reaction of a tourist on seeing this place and what they tell their friends back home about the Bahamas."

CSO: 5000/7505

BRIEFS

GOVERNMENT ENVIRONMENTAL FUNDS--Minister of Housing and Lands, Mr. DeLisle Bradshaw, has said he plans to recommend to the Cabinet that money be made available on an annual basis to environmental interest groups. Speaking at the official opening of the Art Exhibition of the Environment held at the Barbados Museum last Saturday, he said the Garrison Committee (an offshoot of the Keep Barbados Beautiful Committee) was to be saluted for its concern and interest in the Garrison area. He congratulated the Committee on its work, and he urged that other groups follow its example and initiate committees to clean up and preserve the communities in which they lived. Mr. Bradshaw also noted that the Committee's work meshed well with an idea he has proposed to the Prime Minister, regarding the implementation of policies where people would blend in with the environment in which they were living. He said the Garrison Committee was aimed at preserving the Garrison and the surrounding area, and he proposed to recommend to Cabinet that money be made available annually to this type of group so they could better carry out their function. "Everyone in Barbados," he said, "would benefit from this by having a better environment." He hoped the Garrison Committee would concentrate on getting rid of the thoughtlessly dumped litter around the area, and to deal with the "mobile canteens" set up around the area by removing them, because, he said, "they are unsightly." [Text] [Bridgetown ADVOCATE-NEWS in English 28 Sep 82 p 6]

CSO: 5000/7505

STUDY DONE ON INSECTICIDE CONTAMINATION IN COUNTRY

San Jose LA NACION in Spanish 13, 14 Sep 82

[Article by Mayra Porras]

[13 Sep 82 p 1B]

[Text] The problem of accelerated destruction and the misuse of natural resources are evident for any observer: Eroded soils, deforestation and contamination of the air, the water and the land.

The rapid wasting of our planet has caused numerous investigators to carry out studies to determine the effects of the mishandling of those resources on the quality of human life. The irrational use of insecticides has not escaped exhaustive analysis in Costa Rica either; two specialists dedicated themselves to establishing the degree of accumulation of organochlorate-insecticides in man.

These substances are composed of carbon linked with various numbers of chlorine atoms, and they are characterized by remaining in the environment for a long time. Thus, it has been demonstrated that living organisms accumulate this type of insecticide received by various means, so that they quickly reach very high concentrations.

The investigators are Dr Manuel Constenla, chemist, and Mercedes Barquero, Master of Science, both members of the CICA (Environmental Contamination Research Center) of the University of Costa Rica. Both found residual organochlorates in human adipose tissue in quantities five times higher than the norm for the rest of the world.

To give an example of the level of contamination, Dr Constenla says about DDT: "It is difficult to prevent the worldwide dissemination of an organochlorate-insecticide such as DDT. The fact that its principal method of application consists in pulverizing it into minute particles that float in the air guarantees that a large part of it will be carried by the wind to any zone."

In this manner, highly concentrated dust of organochlorate-insecticides is found in houses within areas where they have not been applied.

Regulation

Although Costa Rica's Plant Health Law regulated the use of that type of insecticides, their use is still permitted for combatting certain plaques and the malaria carrier vector. In the case of the latter, the program for combatting the disease was organized in 1957, using as the principal means of attack the spraying of homes every 6 months with DDT.

For malaria control the country is divided into two areas: the nonmalarial area, situated at an altitude of more than 500 meters above sea level, and the malarial area below 500 meters. Inevitably we Costa Ricans are exposed to the action of that insecticide, because as it was said earlier, the rain carries it toward the rivers and the oceans; it also evaporates into the air and is transported by the wind.

The situation is more critical for those who are in direct contact with the insecticides, as in the case of farmers. They, in addition to inhaling "their due quantity" in their homes, have a considerable additional portion in the fields where they work.

The major problem is that currently it is difficult to seek options other than insecticides for the plaques, and that is especially true for DDT. Nevertheless, for some time the CICA has been working on the "technique of sterile males" by radiationin an attempt to replace insecticides in combatting malaria.

This system consists in sterilizing the male anopheles mosquito and releasing it, which diminishes female fertilization.

"In principle this technique should be used in conjunction with fumigation," explains Dr Constenla, "nevertheless it could be the solution that we are looking for to avoid the poisoning that we are suffering."

Effects

In human beings one of the primary effects of the chronic ingestion of organochlorate-insecticides is their deposit and storage in adipose tissue (fat). There is still insufficient data to permit establishing a definitive relationship between this storage and individual pathological states.

In regard to permanent toxic effects, it is known that the concentrations of insecticides in the blood are related to total deposits in adipose tissue and that in circumstances in which there is a sudden mobilization of fat, for example, in conditions of tension, effort or rapid weight loss, there is a simultaneous transfer toward the blood of insecticides and other chlorate components that had been stored in the fat.

It has been proven that this mobilization can have lethal effects in wild animals, but as yet there is noproof that something similar occurs in human beings.

In addition to being deposited in fatty tissue and in the liver, the insecticides accumulate in the brain, gonades, pancreas and other parts of the body. The consequences vary and more studies are needed in this regard. Nevertheless, it has been demonstrated that the organocholorates interfere with the normal functioning of the different organs.

"It should be made clear that there is no relation between cancer and the concentration of these chemical substances in the body, as is determined in research."

The Study

The objectives leading to the development of this analysis were those of determining the concentration of organochlorate-insecticides in the fatty tissue of Costa Ricans, of establishing which insecticide occurs most frequently and of comparing the results in different geographic zones of the country.

To achieve those objectives 82 fat samples were taken during surgical operations performed on an equal number of patients in 16 different hospitals in the country, in accordance with the distribution used by the Costa Rican Social Security Office.

The samples were collected in a very special manner to avoid contamination that could falsify the results.

The method used was that a gas chromatography, which consists of separation and quantitative detection of residues. All of this work was carried out in the installations set up for that purpose at the University of Costa Rica.

It is interesting to note that the fatty samples come from 55 men and 27 women, whose ages ranged from 11 to 81. The patients were not selected according to any special criterion, but in a random manner.

In this way, 12 insecticides and 2 transformation products were studies, as well as aldrin, which was not found in any sample, since it is rapidly changed into dieldrin or is quickly eliminated through the bile.

[14 Sep 82 pp 1B, 7B]

[Text] Although the use of some insecticides has been regulated for some time, the concentration found in the patients are alarming, especially in regard to DDT.

One of the most representative cases illustrating the possibilities that exist on coming in contact with these chemical substances is that of a farm laborer, who has 403.3 milligrams of insecticide in his body's fatty tissue per kilogram of weight.

"He is a living insecticide container," Dr Constenla states categorically.

Results

Of the 82 samples, 80 showed residue of hexachlorobencene (HCB). The only patients not having it were an 81-year-old farmer and a woman domestic.

"It is difficult to explain the absence of the product in those persons," says the specialist, "because it is currently being used as a seed fungicide and formerly it was added to plastics as a flame-retardant substance."

He adds that HCB is a highly stable substance, it is persistant and considered to be an omnipresent contaminant.

On the other hand, there is little Lindane residue. This is easy to understand, since its use in Costa Rica is very limited. There were only 190 kg imported in 1980, according to data by the Ministry of Agriculture and Cattle.

In the case of the heptachloride, as could be expected, it was found in only five samples and its residues were very low, since it is transformed into another substance: heptachloride epoxide.

This product did show values very much higher than those reported for the United States, Great Britain, Italy, Holland and Canada.

"This is not surprising, because 2 years ago 9,163 kg of the substance were imported, and it was assimilated through the diet and through animal products, where it was transformed."

It is used very extensively in combatting ants and other ground insects, as well as in treating the foliage and in the extermination of the "wire" worm so well known in our region.

But the most alarming results are those found in DDT residue. This is a rather stable compound that in almost all organisms is metabolized and converted into DDE or DDD.

The accumulation of this substance or its derivatives occurs through chronic ingestion and persists because it is very soluble in fat and very insoluble in water.

The average concentration of DDT and its derivatives is 33.16 milligrams per kilogram of weight and it is very much higher than that found in other countries.

"The total level may be five times greater than the world average," according to the opinion of Dr Aladin Hassan, expert with the International Atomic Energy Agency.

Distribution

The study demonstrated that the men and women of the rural area show a higher concentration of DDT in their fatty tissue than individuals living in urban areas.

"This is because apart from the insecticides that they ingest, in the rural area they are more exposed to the fumigation that formerly was used on crops. Also, DDT is currently being used to control malaria in those sectors."

In addition, it could be determined that in general agricultural workers are the patients with the highest concentrations of organochlorate-insecticides and that the first six places are occupied by peasants from Alajuela and Limon.

Also noted is the large difference in the average for women domestics, who show 21.76 milligrams per kilogram of weight and the farm workers' average of 58.32 milligrams.

"Doubtless, aside from ingestion and absorption through home fumigations, agricultural workers are more exposed to the action of these substances because of their occupation."

In general, DDE and DDT were the compounds found in the greatest concentration in the adipose tissue of Costa Ricans, and this study demonstrates how the level of organochlorate-insecticides varies in the different zones and how it differs with respect to other parts of the world.

"Here it was noted how man, being at the end of the food chain, accumulates large quantities of those residues in the fatty tissues when these products are used intensively over long periods."

This analysis gives determinant results; nevertheless, Dr Constenla believes that it would be desirable if future research would find a regressive evolution in the level of insecticides, given the fact that in Costa Rica the use of DDT was limited 2 years ago.

Future policies

Due to the consciousness that now exists on the damage caused by the indiscriminate use of organochlorate-insecticides, various institutions and associations are carrying out various programs to educate the population on what this field is all about.

One of the interested organizations is the Advisory Commission for the Use of Insecticides, composed of the Ministries of Health, Agriculture and Labor, of the University of Costa Rica, professional societies for veterinarians and agronomists and the private industry.

Its president, Carlos Alberto Soto, assistant head of the phytopathological department in the Ministry of Agriculture and Cattle, explained that work is being done on a new decree supporting an almost total prohibition of the importation of organochlorate-insecticides.

"In this manner, although we may not say that they cannot be used, this will be impossible if they cannot be obtained."

Also, the vice president of the mentioned association, Mr Evaristo Morales, who at the same time is head of the entomology department of the same ministry, affirms that among the short-term objectives is the establishment of an information program on the use of those substances.

"Education should be permanent, since the most important thing is not to prevent the use of insecticides, but that people know how to use them properly."

In this regard Mr Evaristo is in agreement with Dr Constenla, who believes that good education and technical advice would be the solution to the great contamination that we now suffer.

9746
CSO: 5000/2002

BRIEFS

FORESTRY PROGRAMS--$1.1 million will be channeled through OFIPLAN (National Planning Office) to carry out forestry programs. To carry out forestry projects the country continues to need technical assistance, from the development of investment projects involving the banking system to the administration of the tropical forest for agroforestry and energy purposes. This is the opinion of the group of consultants from the UNDP (UN Development Program) and the FAO, who evaluated the foresty programs, for which $1.1 million has been allocated. Michael Stewart and Manuel Paveri from the UNDP and the FAO, respectively, held a meeting with Claudio Soto, vice minister for planning, along with the directors of the Forestry Directorate, to learn the results of the project evaluation. It was agreed that the project should be given a new orientation to achieve the desired goals in the forestry sector. Among other things, it was recommended that this project should be in effect for an additional 36 months and that some of the programs in the project be financed through the Preinvestment Fund administered by OFIPLAN. It was also considered opportune to provide institutional and technical strengthening and to push financing projects in this forestry sector. [Text] [San Jose LA REPUBLICA in Spanish 19 Sep 82 p 2] 9746

CSO: 5000/2002

ENVIRONMENT AGENCY TO IMPROVE PROGRAMS

Managua LA PRENSA in Spanish 8 Sep 82 p 11

[Article: "Revival of Wild Fauna"]

[Text] The first draft of the 1983 IRENA [Natural Resources and Environment Institute] budget is being prepared with a view to obtaining the funds needed to greatly improve a series of programs that presently are of major concern to that institution.

The above was reported by Enrique Garcia Caldera, IRENA spokesman, who confirmed that priority plans include protection of the fauna, the environment, the forest, natural resources, and the purity of sources of water.

Large tracts of land are being cared for and are part of a vast technical plan in various areas to protect the environmental and animal resources of the entire country.

IRENA at present has limited resources because of difficulties in the central government, but next year there will be greater coverage of programs having to do with forests, rivers, wild fauna, and resources of ecological concern.

Positive results are already being seen in this field, such as a substantial increase in wild fauna, deer, pacas, lizards, turtles, all kinds of birds, tapirs, wild boar, ocelots, wild cats, etc.

The major reserve sections are in the mountains of Matagalpa, Jinotega, Esteli, the Atlantica area, and the natural resources of 5,000 blocks at the Masaya volcano, where a national park has been established, to be maintained and organized by the recreation department of IRENA.

"Those who want to hunt as a sport in the national territory must obtain a license," said the spokesman, "but natural resources are not prohibited as a means of livelihood; that is, Nicaraguan peasants are not prohibited from hunting as a means of livelihood."

The above was made known in view of a report that in some sections of Siuna and Bonanza peasants were forbidden to hunt as a means of livelihood for their families.

"We do not prohibit this type of hunting, but we do forbid hunting by pillagers who abuse the use of guns and hunt in order to trade in and export hides," said the spokesman.

IRENA is also evaluating the damages to agriculture experienced as a result of the long drought. In this connection the harm done to the fauna will be made known, said the spokesman.

The long drought can damage the ecological environment and harm the fauna as a result of the scarcity of uncultivated nourishment, as well as the water that is so necessary for the maintenance of animal life in the national forests and mountains, concluded the spokesman.

8255
CSO: 5000/2000

BRIEFS

SHIP POLLUTION MONITORED--A squad of four Mystere planes will be allocated to control the malpractices of ships polluting the Red Sea waters. They are to detect ships washing their fuel tanks in sea water. This violates the provisions of the international treaties organising the use of seas and is one of the principal causes of water pollution. This was explained by the Deputy Prime Minister for Defence and Military Production Field Marshal Abdul Halim Abu Ghazala who said that the planes would operate within the framework of an agreement arranged with the Ministry of Petroleum which is also involved in handling the problem. The Petroleum Ministry he said, was willing to allocate the sum of LE 10 million to detect such practices and so prevent pollution in the Red Sea. Ships discovered emptying their tanks would be fined $500.000 thus cowering control costs officials at the Petroleum Ministry said. [Text] [Cairo THE EGYPTIAN GAZETTE in English 1 Oct 82 p 3]

CSO: 5000/4602

MINISTER CHIEPE WORRIED ABOUT MOCHUDI'S WATER SHORTAGE

Gaborone DAILY NEWS in English 3 Sep 82 p 2

[Article by Larona Sedimo]

[Text] THE PROBLEM of water shortage which Mochudi is experiencing has become a disturbing feature in most of the major villages, said the Minister of Mineral Resources and Water Affairs, Dr Gaositwe Chiepe, in Parliament on Monday.

Dr Chiepe admitted that she was aware a second generator was required to bring to normal the water situation in those villages.

The Minister made the remarks when answering a question from the MP for Mochudi, Mr Greek Ruele, who had asked what steps were being taken to remedy the water situation in the villages. The MP also said this was a result of the drying up or low yield of the existing boreholes and the continuous bursting of reticulation pipes due to the poor materials used.

The Minister however, explained that regarding Mochudi, steps have been taken to find a solution to the problem and that as an initial move the borehole at Pilane which was previously used for the Experimental Windmill Programme has been linked to the Mochudi system. "That", she said, "had slightly improved the water situation in the village."

The Department of Water Affairs and the Department of Geological Survey, Dr Chiepe disclosed, jointly carried out a water survey in Mochudi to identify additional water sources for the village. She said drilling would commence as soon as funds were available for that purpose.

Dr Chiepe said that for the current fiscal year, her Ministry requested funds to the amount of P4,6 million for rehabilitation and expansion work in the major villages. This initial request, the Minister pointed out, could not be met until funds were provided through Domestic Development fund (DDF) because of the severe budgetary constraints that the country is experiecing at the moment.

However she disclosed that she had received indication that the Ministry of Finance and Development Planning (MFDP) would release P1 million from the DDF to attend to the most urgent cases.

Mochudi, Dr Chiepe said was one of the villages under active consideration for the emergency programme.

BOPA

CSO: 5000/16

NEW BOREHOLES MAY EASE WATER SHORTAGE

Gaborone DAILY NEWS in English 9 Sep 82 p 2

[Article by Keefelakae Tolse]

[Text] THE DEPARTMENT of Water Affairs in Gaborone, on Monday started drilling five more new boreholes in Mochudi in a bid to rescue the critical water shortage situation that has hit the village.

A team of drillers were by Monday already drilling the first borehole in the eastern part of the village. The team is reported to be using a modern rig which the drillers said can sink at the rate of a 40 to 50 metres depth per 24 hours on favourable sites.

The move was a response to an urgent appeal from the Minister of Agriculture, Mr Washington Meswele and the District Commissioner Mr I.I. Zebe.

Mr Zebe told BOPA that the village has been reeling from water shortage for the past two months. He said the situation has been moving from bad to worse.

Hospitals, Schools and Government buildings which use water system toilets are reported to be the most hard hit. And some development projects are said to be at a standstill.

Mr Frank Kganane, Officer In Charge of water supply in Mochudi, explained the cause of the shortage as being the very low yield of the existing five boreholes that supply the village.

He said most of the boreholes have gone dry and further added that the situation was aggravated by continuous break-downs and pipe bursts.

At the moment, major replacements of new and better quality pipes are being undertaken, Mr Kganane asserted.

The drilling team is concerntrating on 20 water points in Mochudi surveyed by the Geological Department, one of the drillers, Mr Basimane Mmanaesi, revealed.

More boreholes will be drilled at Ramotlabaki, Dikwididi and Mmathubudukwane village in Kgatleng. **BOPA**

CSO: 5000/16

BRIEFS

PALAPYE RELIEF PROJECTS--The Central Government has allocated close to P22 000 for labour based drought relief projects in Palapye, the Vice Chairman of the Village Development Committee, Mr Lucky Maforaga, disclosed in a meeting last Thursday. The meeting, whose main purpose was to finalise preparations for the Palapye area programme decided that Senior Tribal Authority, Mr Raditanka Ntebele, should call a kgotia meeting today to inform the residents about the programme which is scheduled to start on Monday September 13. Most of the Palapye labour based projects were approved by the main Drought Relief Committee in Serowe except the housing project. Out of the requested 30 houses, to accommodate the increasing number of Government employees in the area, only eight were approved. Mrs Ruth Kgomela, the Palapye VDC secretary announced that the food rationing programme for the destitute and the disabled was also due to start. The meeting also heard of the slow progress being made in the construction of rondavels owing to scarcity of thatching grass and poles. BOPA [Text] [Gaborone DAILY NEWS in English 9 Sep 82 p 3]

MOCHUDI BOREHOLE--Water tests were to be carried out in Mochudi last Wednesday after water was dug in the eastern part of the village. This follows an extensive search after the Kgatieng had experienced an acute shortage of water. A water rig was rushed to the village on Monday and after seven hours of drilling water was struck at a depth of 48 metres at Boseja ward in the eastern part of Mochudi. The water was found at one of the five sites that had been surveyed. One official who was involved in the drilling operations said in an interview that the new borehole would help to alleviate the water problem in the village since water was now being pumped up at a rate of 90 to 100 litres per minute. BOPA [Text] [Gaborone DAILY NEWS in English 17 Sep 82 p 1]

RELIEF PROJECTS HALTED--Drought-relief based projects have been halted in Kweneng East because there are not enough funds available. This had been disclosed by Kweneng District Council's Planning Officer, Mr Calvin Kgalemang. He told me in an interview, that a project memorandum has since been submitted to the Ministry of Local Government of Lands requesting urgent funds. Earlier, desperate villagers had appealed to the Minister of Mineral Resources and Water Affairs, Dr Gaositwe Chiepe--who was touring the district together with MP Mr David Magang and other officials--to urge the Ministry of Local Government and Lands to speed up with their wages for working on drought-relief projects. Villagers complained that they had worked without pay, for up to three months in some villages. Some of the angry villagers threatened to send a delegation to the Kweneng District Commissioner or Council, to demand their wages. Villagers also complained over water shortages which had hampered other development projects. Livestock was also dying, they said. For example, a teacher from Metsemotlhabe School disclosed that the school was buying water at P2 per drum from motorists who brought water from Mogoditshane. The villagers were however given an assurance by the Minister, that some of their villagers have already been earmarked for water drilling operations. BOPA [Text] [Gaborone DAILY NEWS in English 17 Sep 82 p 1]

DROUGHT-RELIEF MEASURES--Lerala based extension team workers have been called upon to cooperate and share the limited Government resources for the welfare of the nation. The call was made by Sister-incharge at Lerala Clinic, Miss Ontse Lobelo, at a recent meeting summoned to elect a committee that will help speed up the implementation of drought relief measures. Miss Lobelo urged Government extension team workers to meet regularly and share ideas on how to combat drought effects in Lerala which is reported to be the most hard-hit area in that constituency. She further advised the new committee to draw a time-table to enable it to carry out their day to day activities and to coordinate sectional meetings under the supervision of Mr Show Roger, the local traditional leader. Agricultural Demonstrator for Lerala, Mr W. Kgoboki was elected vice-chairman, Assistant Community Development Officer, Mr Otimile Phuthego, Secretary. The meeting also agreed that the VDC and the PTA be helped in their drought relief efforts. [Text] [Gaborone DAILY NEWS in English 20 Sep 82 p 2]

CSO: 5000/16

BRIEFS

RIVER SOURCE IN DANGER--Embobut and Embolot rivers, which have their source in Embobut Forest of Elgeyo/Marakwet district, face a danger of drying up if steps are not taken to curb the destruction of the forest by the residents of Sambrir Location, the District Commissioner, Mr. Amwel Ambuka, said when he led the district forest licencing review committee to the forest to assess the destruction caused to it by the illegal squatters and unauthorised grazing. The committee, which toured a large part of the forest, estimated that about 5,000 hectares of forest had been destroyed and was now open grassland in what was once a thick forest. Addressing a meeting at Kaitamoi Sub-location after touring the forest, Mr. Ambuka, expressed his misgivings with the way the people of the area had resorted to the destruction of the forest thus endangering the lives of the people living in the Kerio Valley who depend on the rivers for their livelihood. If the two rivers dried up as they might do during the dry season, then the work of the Kerio Valley Development Authority would not succeed as the projects depended on water from the rivers, he said. The D.C. ordered the chief of the area and his assistant chiefs to ensure that all the people who were not authorised to graze or live in the forest moved out immediately. [Text] [Nairobi THE STANDARD in English 25 Sep 82 p 5]

CSO: 5000/17

WARNING ON LAGOS FLOODS SHOULD BE HEEDED

Lagos DAILY TIMES in English 23 Sep 82 p 7

[Article by Lucas Adefemiwa]

[Text]

THE damage to buildings, roads and personal property from the floods of the early rains of the year was so telling that residents of the Lagos metropolis started wondering, at a stage, what would become of the city when all the rains of the year might have fallen.

However, a drought has been on since early July and Lagos has thus been saved of a major flood disaster that would no doubt have resulted from the heavy down pour of the last three months.

But lest we forget in the sudden relief brought about by this year's unusual drought, it is pertinent to state here that the flood situation of June this year would repeat itself in a more monstrous form unless the authorities concerned act with despatch to open up the drains in Lagos before the next wet season.

For though the rains have since stopped and the storm has since ceased, certain parts of the city are still very much in bad shape and the residents of these affected areas are yet to recover from the initial shock.

Prominent among such badly hit areas is Shogunle, a heavily populated area of the Lagos metropolis, lying along the Agege Motor Road.

At the height of the heavy torrents of last June, Shogunle was very much in the news because here, in fact, the floods actually took their toll on both public and private property.

And while markets and schools were being abandoned and private homes were being hurriedly vacated, the inhabitants of this flood-invaded layout made several representations to the Lagos State Government but only to be told on each occasion that a giant drainage system is in the pipeline and that the residents of Shogunle might as well wait for the completion of the said city-wide giant drainage.

But the fear of the afflicted people of this area is not allayed by such an ambitious drainage plan because the plan would take quite some time to materialise and secondly the problems of Shogunle may, after all, not be solved by the plan.

The proposed drainage system may not rid Shogunle of floods for a day because the wastes flowing into the area are man-made rather than coming from any natural causes.

During a recent survey, I gathered that Shogunle is the area to which the jetsan and floatsan of the Government Reservation Area (GRA), Ikeja flow. I was told that this same layout is the outlet for the wastes and debris of the Murtala Mohammed International Airport.

And for these reasons, the residents of Shogunle told me during the interview, that the Lagos State Government should come the aid of this community through an emergency relief plan for the construction of dranages in the area rather waiting for the city-wide plan to hatch.

If this suggestion is not taken seriously, warned the inhabitants, the day might come when the whole of location would be washed away by floods.

I have also been told that officials in the Lagos State Ministry of Environment are ungeographical people who were said to have had trouble about the exact location of Shogunle during one of the delegations led by the people to the ministry.

CSO: 5000/21

RAIN BRINGS RELIEF, DROUGHT BROKEN IN SOME AREAS

Johannesburg THE CITIZEN in English 13 Oct 82 pp 1, 2

[Text] SOAKING rain has brought relief to several drought-stricken areas of the country, but hail has caused serious damage, estimated at several million rand, in the lower Orange River area in South West Africa.

On Perde island vineyards and crops over an area of about 12 000 hectares were flattened and damage is expected to total about R6-million. It is feared that farming will be affected for at least three years.

This year's grape harvest in the area, estimated at 20 000, has been destroyed.

In parts of South West Africa up to 100 mm of rain was recorded, and in the Stampriet area, hail lay a metre deep on the ground. Some sheep were reported killed by the hail, and wind storms caused damage in several areas. Soaking rain fell over a wide area.

Weakened

Rain fell over the greater part of the Transvaal on Monday night and yesterday morning, and the grip of the drought weakened over large parts of the province. The dry north-western Transvaal has had fairly general rain, but a spokesman for the Lichtenburg co-operative said it was not sufficient.

Rain fell during Monday night over parts of the eastern Cape bringing temporary relief to the region, but more rain is needed to break the drought. The south-eastern Cape has also had soaking rains.

Several areas in the north-eastern Cape had their first spring rains and in the Lady Grey district between 25 and 40 mm was recorded.

Good falls

The drought-stricken Karoo and Namaqualand have also had good falls and in east Bushmanland, where it last rained about six years ago, up to 30 mm was measured.

It is reported from Durban that soaking rains fell over most of Natal during Monday night, bringing relief to the maize growing areas of northern Natal, with some areas recording up to 40 mm.

Rain continued to fall over a wide area yesterday and more is forecast by the Weather Bureau.

Most of Natal has been saved from imminent disaster by the rains and even normally dry-as-dust thornveld areas such as Weenen have had good rains.

Nick of time

Thornveld farmers said that the rains had come in the nick of time as the cattle, goats and donkeys had eaten up all the grass and were largely subsisting on browse from trees.

The rains brought relief to the Ladysmith ara where some farmers had been forced to cart water to stock. Farmers said they would now be able to plant.

Mr Chris Mann, of the Valley Trust Institution, near Botha's Hill, said they were having the best rains for the past two years.

In farming areas like Bergville enough fell to liven the veld and some farmers started to plant yesterday.

Far northern and southern parts of Natal, Vryheid and Kokstad, had less rain but conditions are no longer critical.

Cedra has had 23 mm this month whereas the average for October is 83 mm.

Heavy

The weather bureau reported heavy precipitation from the Little Karoo, where Fraserburg, with 45 mm, had the national record rainfall for the 24-hour period ended at 8 am yesterday.

Many other parts of the Cape Province also received their share of the wet bonanza.

Despite the rain drought conditions continue in many parts of South Africa and have begun to assume far reaching economic implications.

Agricultural production is expected to decline by up to R700-million this year.

The chariman of the Jacobs Committee of inquiry into the agricultural sector, Dr Japie Jacobs of the Reserve Bank, estimates that agriculture's contribution to the country's total production this year will be down by between 10 and 15 percent.

On last year's figures this means a reduction in gross farming income of between R450- and R700-million. There have been marked reductions in all of the country's main summer crops.

CSO: 5000/15

CONDITIONS IN DROUGHT-HIT BOPHUTHATSWANA DESCRIBED

Johannesburg SOWETAN in English 8 Oct 82 p 4

[Article by Monk Nkomo]

[Text] **THE DRIVE on the dusty road into the drought-stricken villages of Bophuthatswana near Ga-Rankuwa, brings you face to face with a pathetic sight of scores of women who say they spend up to two weeks without washing due to the growing critical shortage of water.**

They also spend more than two weeks wearing the same clothes because there is just no water to wash their clothing.

"You better have nothing but water," said a worried-looking Mrs Elizabeth Marobela, an elderly mother of eight, when **The SOWETAN** visited Kgabalatsane this week. The whole family, including the four who are still at school sometimes washed with the same water used by her husband who leaves for work at 4 am. "We sometimes spend up to two weeks without washing," she said.

Tired-looking and sitting on an empty 25 litre container, and waiting in the long queue to get water from the water pump, Mrs Marobela said: "We pray everyday for God to help us. Right now I am dizzy because of hunger and the scorching heat. I came here to queue for water at 5 am, and have not had anything to eat because there is no water to cook with. Unless it rains, we are all going to die of thirst."

The five affected villages — where landowners are making huge profits by charging up to R2.50 for a drum of water — are Kgabalatsane, Ramogodi, Rabokala, Hebron and Winterveldt.

Mrs Maria Padi, who said she had joined the queue for water at 5.30 am, said: "I have now spent two weeks in this brown dress, without washing. Man, I tell you we are suffering and the situation is terrible. I really do not know what to do with my five small children who last washed two or three weeks ago. The whole family stinks of the sweat. Our only hope is God."

Scores of women waited impatiently at the water pump. The only pump in the village. Some drew dirty water from a dirty well nearby. It did not matter what the water was — polluted or not.

Others carried their babies on their backs. Some sat inside wheelbarrows while others — three or four at a time — were sweating, pumping water. A pathetic sight indeed.

"It is amazing that we have not yet been victims of the cholera epidemic," they said. "The Bophuthatswana Government must do something about this critical situation otherwise we are all going to die."

Holding her four-month-old baby daughter, Muriel, Mrs Lorette Nguni said her baby could not be washed or fed with baby foods because of the shortage of water. "I only breast-feed her. My husband, Isaac, sometimes goes to work without having washed. This is the worst suffering we have ever encountered in our lives. Water — the most important thing in life."

The scores of women were happy when a Johannesburg micro-biologist, Dr Leon Buchan, expressed his humanity by freely giving them about 250 tablets designed to purify the dirty water drawn from the well.

Dr Buchan, who is working for a major chemical factory, urged the Government of Bophuthatswana to buy the tablets because they could cost more if sold at the chemists. Each tablet had been specificlly designed to be immersed into a 20 or 25 litre container.

Unless it rained, the survival of the large population of these areas depends on the mercy of the Almighty. All because of H20 — the scientific name for water — the lack of which has created misery for the Bophuthatswana citizens.

CSO: 5000/15

HWANGE'S GAME REPORTED DYING OF THIRST

Johannesburg THE CITIZEN in English 18 Oct 82 p 9

[Text]

HARARE. — Scores of animals are dying in the Hwange National Park and thousands more are expected to perish in the next month during the worst drought in the area's recorded history of 65 years.

The provincial warden there, Mr Ron Thompson, said the park's 20 000 elephant, 10 000 buffalo, 65 black and 65 white rhino's, as well as more than 500 lion's, were just some of the animals affected by the lack of water.

"There is simply no grass left in the park and this month the temperatures will rise considerably. There are still four weeks left before the rains break. So thousands of animals will die," he said.

Annual rainfall in the area normally averages about 865 mm, but only 330 mm fell last season.

However, nearly 50 mm fell last week and sprouting grass showed signs of greening.

The park, Zimbabwe's largest, borders on the Kalahari Desert and its sands do not store water well.

Most of its pans are watered by boreholes, some of which are 1 000 m deep and have pumps which are more than 40 years old and break down very often.

But relief is coming to the area. Four pumps and engines, to be installed at major watering points which have no supply at all, arrived in Harare last week.

They are the result of an appeal from the Conservation Trust of Zimbabwe to help save the drought-threatened animals.

The trust's director, Mr John Pile, said the pumps would be working next week.

"The next stage is to refurnish 35 pumps in the park which are dicey and we already have three units available for this effort."

In the south of the park, near Tsholotsho, there were many seeps where elephant dug up water.

"But the problem is that while the water is at first near the top of the ground, the level quickly drops and then the baby elephants' trunks are not long enough to reach it.

"That's when they start dropping down and dying," Mr Thomson said. —Sapa.

CSO: 5000/20

TOUGH RULES FOR TRANSPORT OF POISONS PLANNED

Johannesburg THE STAR in English 25 Sep 82 p 3

[Text] South Africa is to get legislation governing the transport of dangerous substances.

The need for such a step was highlighted this week when a consignment of more than 500 kg of the deadly poisonous gas, methyl bromide, went missing on Monday.

The consignment of crop-spraying poison, which was enough to wipe out an entire town, disappeared when the truck carrying it was stolen in Bethal.

Luckily, the truck and its death load were found abandoned near Bethal on Wednesday morning.

The introduction of "specific" regulations regarding the transport of these substances was revealed by Dr Gerhardus Oberholster, director of environmental health services in Pretoria.

"At the moment we do have certain regulations about the packaging and labelling of dangerous substances," he said, "but the stricter, compulsory measures which are coming are very necessary."

The regulations envisaged were similar to the Hazchem (hazardous chemicals) system whereby vehicles tansporting dangerous substances would have to have a coded or printed sign attached to the back of the vehicle, he said.

This sign would set out the emergency procedures which should be employed with that particular chemical.

All emergency services would have the key to the coded signs.

"This means that people will immediately know what medium to use to counteract the chemical, whether to evacuate the area where the chemical has spilt and so on," he said.

He explained that several South African companies were already using the Hazchem system, but on a voluntary basis.

CSO: 5000/15

BRIEFS

MEAT PRICE DROP--PORT ELIZABETH--The drought in the Eastern Cape has forced a drop in meat prices because farmers are keen to sell their livestock to minimise their losses. Mr. Cecil Moorcroft, the chairman of the Port Elizabeth Livestock Auctioneers' Association, said yesterday he expected the present low prices situation, with all the meat markets fully supplied, to continue until the drought ended. Most of the meat comes from local suppliers, and no abnormal quantities had been received from farmers in areas outside the Eastern Cape, which had been worse hit by the drought. He said farmers were keen to sell their cattle and sheep because there was very little grazing left. However, the amount of meat markets could absorb was controlled by the Meat Board and this prevented gluts. Although the quality of meat presently available was very good, it was likely to deteriorate if the drought lasted much longer, he said. [Text] [Johannesburg THE CITIZEN in English 9 Oct 82 p 5]

CSO: 5000/15

FOOD SUPPLIES TO DROUGHT AREAS DOUBLED

Harare THE HERALD in English 8 Oct 82 p 11

[Text] Bulawayo

Food being sent to drought stricken areas has more than doubled since July, the chairman of the Matabeleland drought relief committee, Cde J. F. Mudenda has said.

In an interview he said that people had asked for more food to counter the effects of the drought.

The priority areas--those worst affected by the drought--are Binga, Beitbridge, Plumtree, Psholotsho, Gwanda, Kezi and Lupane.

The other five districts of North and South Matabeland were not considered to be first priority areas as they each had an estimated population below 50,000.

The drought relief programme had experienced several problems, among them the transportation of food to the affected areas, and labour for distribution of food at district level.

The transport problem had been solved to some degree by minimising the use of district transport and concentrating on the use of transport controlled by the provincial drought relief committee.

The provincial committee had nine trucks and was hoping to receive more from the national committee when they were available.

The food distribution programme had not been affected in any way by the mealie meal shortage in Bulawayo as maize grain and not mealie meal was sent to the drought areas.

Cde Mudenda said there was an adequate supply of maize, ground nuts and beans for the relief programme.

The seventh of the relief programme's food diliveries to the 12 districts in Matabeleland North and South was due to be completed on Tuesday.

The programme, which had experienced some teething problems, had gone into high gear and was running smoothly, said Cde Mudenda.

Food distribution would continue as long as the drought held.

Despite the fact that the people in these areas were receiving food from the committees, they were not sitting back and waiting to be fed.

People had requested that they be sent crop seed so that they could begin to plough and sow once the rains broke, said Cde Mudenda.

The drought relief committee had agreed to do this but had asked the relief committee on livestock to carry out the programme.

CSO: 5000/16

TENSIONS GROW AS DROUGHT TAKES HOLD

Johannesburg THE STAR in English 28 Sep 82 p 42

[Article by Brendan Seery]

[Text] **BULAWAYO — Spring, for the farmers in the parched Matabeleland area of Zimbabwe — both the black peasants and white commercial ranchers — is no time for joyous frolicking.**

With the province's main rains still more than two months away farmers are looking with anguish as their cattle keel over and die while the September sun, growing hotter each day, claims what little water there is.

The situation in tribal areas bordering Botswana, where the drought is being spoken of as the worst in living memory, is inflaming tensions and bitterness between peasants and white ranchers.

Tribal farmers, who in the Ndebele tradition are pastoral, have been looking with envy at neighbouring white farms where grazing appears to be plentiful.

White ranchers in the arid Mphoengs district bordering Botswana, blame the peasant farmers for setting up the murder by dissidents last month of one of their number, University of Zimbabwe lecturer Dr Peter Gradewell.

His friends say he and his 15-year-old niece were gunned down by dissidents after impounding tribal cattle which had been driven on to his grazing ground.

There have been many other heated exchanges between blacks and whites over the issue, but Government officials say they are powerless to do anything.

Mr Herbert Matanga, district administrator of the border district of Plumtree, says many of the area where the illegal grazing is being carried out are remote, and even if peasant farmers were ordered to remove their cattle, they would be back the following day.

Some white ranchers were showing enlightened and humanitarian views, in allowing their black neighbours to come on to certain portions of their land to graze cattle, said Mr Matanga.

Still others were buying skins of cattle from the tribespeople, he said.

The ranchers, for the most part, say they barely have enough grazing for their own stock, let alone the thousands which have been deliberately driven on to their land from the adjacent communal lands.

They say the black farmers could have averted some of the worst effects of the drought by selling off large proportions of their cattle to the country's Cold Storage Commission (CSC) earlier in the year.

Mr Matanga in turn points out that the basic Ndebele man, who has been brought up with cattle, would be committing "cultural suicide" by selling off his stock, which constitute his visible wealth.

In some of the communal lands, carcasses of cattle which have succumbed to the drought literally dot the countryside.

In the Maitengwe area, bordering the Hwange (formerly Wankie) game reserve, the only dam for kilometres around is expected to dry up by the end of this month. Cattle are dying after getting stuck in mud at the dam, which is at its lowest ever level.

Other beasts have been lost to wild game, which come to the dam at night to drink. Peasant farmers speak of having had cattle trampled to death by rogue elephants in the competition for water.

Wallowing elephants also make the water silted, which in turn is thought to be responsible for further cattle deaths.

The people themselves, particularly in the semi-desert areas alongside Botswana, have to walk many kilometres for water, often having to dig deep into river beds to find it.

On some occasions people from Zimbabwe crossing into Botswana in search of water had been arrested by the Botswana authorities, said Mr Matanga.

Drought relief programmes were in full swing in the district, but are being hampered by the activities of armed dissidents and by the lack of transport, said Mr Matanga. He said Government health workers had found that many people in the worst-hit areas, and particularly children, were suffering from malnutrition.

The commercial farmers, said Mr Rob Sayers, Matabeleland chairman of the Commercial Farmers' Union, had not been as hard hit as those in tribal areas, although the season had been one of the worst.

"Forward planning has enabled most commercial farmers to ride out the drought, although if we had another bad season next year, I'm afraid many of them will go to the wall," he said.

Among the farmers' contigency plans, put into operation earlier in the year, were widespread sales to the CSC, which took pressure off the land, as well as building up large stocks of silage for the cattle the previous year.

Although the first rains of this new season — light showers — have already fallen in some parts of the province, the bulk of the rain should fall during November-December. By then says Mr Sayers, cattle, in a much weakened state, will succumb to veld diseases quicker.

The farmers that made allowances for the capriciousness of the weather in their planning last year will be well off. But some, says Mr Sayers, having had two or three good seasons, seemed to believe the rains would always be sufficient.

Another Nyamandhlovu rancher agreed.

"In Matabeleland, drought is always there, like death and taxes. It might slide into the background for a few years, but you cannot afford to ignore it."

CSO: 5000/15

DROUGHT CLAIMS MORE CATTLE IN MATABELELAND

Salisbury THE HERALD in English 4 Oct 82 p 7

[Text]

BULAWAYO.

THE disastrous effects of the drought in Matabeleland could have been minimised if people had sold their old cattle, and if grazing and water for the remaining breeding stock had been procured early.

A survey has shown that apart from starvation among Matabeleland's rural population, livestock is dying in large numbers.

The Lupane District Administrator, Cde Christopher Simela, said the drought was very acute in the area.

"Some people didn't reap anything at all from their fields," he said, adding that the Drought Relief Programme was supplying them with maize, groundnuts, salt and beans.

"We're presently trying to hire water-bowsers to enable us to supply the hardest hit areas with water," he said.

Cde Simela said reconstruction of boreholes was under way, but because of the security situation, the Ministry of Water Development was reluctant to help with personnel.

He said: "Cattle are dying in our area, but we have been given some assistance by the Forestry Commission in whose area we now have some 500 cattle grazing."

He said shortage of water in the Forestry Commission area was the major problem.

BOREHOLES

"We have drilled one borehole in the area, and the Forestry Commission authorities say if we can drill another three boreholes, they will allow an additional 200 animals on the land," he said.

Cde Simela said a few hundred cattle had died, and the remaining ones were in very poor condition.

"I feel that the situation would not be as bad as this if cattle had been taken to commercial farms like Kana Block, which has been vacant for several years, and if water sources had been developed much earlier," he said.

In the Matobo district, between 500 and 1 000 cattle have perished because of drought, said a district official at Kezi.

"We have encouraged some commercial farmers to take some communal cattle for grazing, and in this way, some of our people's cattle stand a better chance of surviving."

He said the district authorities had encouraged destocking in the area which would then feed breeding stock.

"We are waiting for drilling rigs we have hired from a Bulawayo company, and we hope to get them soon.

"We are still giving out maize, and delivering water by means of bowsers to the hardest hit areas," he said.

The Nkai district has also been hit hard, said a district official.

"Our main problem is shortage of water, and some people drive their animals for between 30 km and 40 km to drinking points," he said.

He said the shortage of grazing land was not as serious as the lack of water on cattle because animals could eat leaves off trees.

"We have got reports of cattle dying throughout the district, but we don't yet have statistics," he said, adding that the Ministry of Water Development had promised to drill boreholes as early as last April when it was officially approached, but had not yet drilled any in the area.

"If we had sent some cattle to areas like the Gwampa Forest, and supplied drilling rigs, we could have lessened the seriousness of this problem," he said.

"Now we are waiting for sand abstraction equipment, but we have been told that there is a shortage of piping."

He said food distribution in the area had stopped temporarily during the recent census exercise, but trucks had been sent to fetch more food from Bulawayo and distribution would be resumed shortly.

NOT ENOUGH

"In this field, our problem has been that some old and disabled people who had qualified for public assistance through the Social Services Department were, instead, referred to our Drought Relief Committee whose meagre food supplies cannot provide enough even for such cases," he said.

Drought is widespread in the Bulalima/Mangwe district, said the District Administrator, Cde Herbert Matanga, who added that the situation was "turning from bad to worse".

"The level of water in many boreholes and wells has dropped and some areas are so short of water that they are becoming health hazards," he said.

Cde Matanga said following several meetings with the Provincial Drought Relief Committee, a team of hydrologists from Harare had last week surveyed seven areas for water and would announce their results later.

"While we are waiting for drilling rigs, we have already installed five sand abstraction plants and received another 30 only this week (on September 29) of which four will be installed in the Maintengwe River.

"The location of the remaining 26 will be discussed by our appropriate authorities," he said.

Cde Matanga said that while the district was awaiting rigs, as well as looking into the possibilities of sinking wells, there was great need for destocking throughout the district's communal lands because they were heavily over-stocked.

SOLVED

"In a way, I believe that our water problem is partially solved because we have the money but not the rigs.

"We have applied to the relief committee to help with bowsers so that we can supply areas critically short of water as they are becoming health hazards," he said, adding that the areas include the Masendu locality and Nkologwe school.

Cde Matanga said local commercial farmers had been asked to take some of the communal land cattle on to their lands provided the owners of the animals would help keep out unauthorised animals from the commercial farms helping their cattle.

On the distribution of drought relief food, Cde Matanga said: "We are waiting for more supplies because we distributed all that we had just before the census exercise started."

The drought in the Gwanda district is "very serious", said the Gwanda District and Matabeleland South Provincial Authority chairman, Cde Zephaniah Sihwa.

"The drought has hit our livestock more than the people as dams and rivers are dry and two sand abstraction projects on the Tuli River have failed to bring out water,' he said.

"We spoke to the Minister of Water Development, Cde Cephas Msipa, about the need for drilling and well-digging equipment, bowsers and troughs, but nothing has materialised up to now."

He said the Beitbridge district had drilling rigs but no grass, while the Insiza district was short of grazing, although parts of it have some water.

"If we don't get rains by November, then all our hope on cattle will vanish," he said.

CSO: 5000/16

BRIEFS

HWANGE GETS VITAL PUMPS--An international appeal to help save drought-hit wildlife in Hwange National Park has borne fruit, with both Zimbabwean and overseas troups donating new pumping equipment. The equipment was handed over to the Department of National Parks and Wild Life Management this week. The director of the Conservation Trust of Zimbabwe, Mr John Pile, said that following an appeal by the department for help in replacing Hwange's aging or broken-down pumps, local and international concerns had moved quickly. One complete pumping unit had been donated by the trust, a Danish-based firm, Grundfos, had given three ejector pumps, and Stewarts and Lloyds of Harare had donated three mono pumps. A British company, R.A. Lister, had sent three Lister engines. Grundfos and another Harare concern, Ames Ltd, have agreed to inspect the remaining pumps and refurbish them where possible. Mr Pile said Hwange had been hit harder by the drought than other parks. But through the generosity of donors, the problem could be solved. During droughts the Government's first responsibility was to people and livestock. "It is here that the trust, as a non-government, non-profit body, is able to help by co-ordinating assistance programmes with the aid of business interests," he said. Earlier this week Senator Paul Savage said game--particularly elephant--was dying in large numbers in the park and called for urgent Government action. [Text] [Harare THE HERALD in English 15 Oct 82 p 9]

DROUGHT RELIEF PLAN--Bulawayo--The Minister of Lands, Resettlement and Rural Development, Cde Moven Mahachi, has no objection to controlled grazing on land bought by the Government as a temporary drought relief measure, the Minister of Water Resources and Development, Cde Cephas Msipa said yesterday. He was speaking after yesterday's meeting with Cde Mahachi to discuss proposals made by district councillors and administrators at an extraordinary meeting of the Matabeleland drought relief committee. [Text] [Harare THE HERALD in English 15 Oct 82 p 1]

UK BOOSTS DROUGHT RELIEF--The drought-relief programme yesterday received a boost with a British donation of two water-drilling rigs and eight tractors. The equipment was presented to the Minister of Water Resources and development, Cde Cephas Msipa, by the British High Commissioner, Mr Robin Byatt. It was the first consignment of seven drills and eight tractors with spares, worth a total of nearly $500 000 under the British aid programme to Zimbabwe. Thanking Britain for the gift, Cde Msipa, said they would make a significant contribution in those parts of the country suffering from the drought. The first consigment would be used in the Midlands at Chiwundura and Takawira and the ministry had already trained the crews to operate the equipment. Mr Byatt said further discussions were going on between his government and the ministry on additional projects. [Text] [Salisbury THE HERALD in English 6 Oct 82 p 3]

CSO: 5000/16

PIRAEUS, NIKAIA, AIR WATER, SEA POLLUTION ANALYZED

Athens AKROPOLIS In Greek 19 Sep 82 p 11

[Excerpts] Piraeus 1982. Five hundred and thirty-five thousand inhabitans and people working in the city and its suburbs. Five hundred thousand automobile "trips" a day in the streets. Daily movement in the harbor from 180 to 200 ships.

Piraeus. The busiest port of the country. The city with the most severe pollution in Europe. With the heaviest atmosphere and the most polluted waters.

The principal sources of air pollution in Piraeus are: the fertilizer plant and the cement factory in Drapetsona, 35 heavy industries and over 400 lighter ones and cottage industries within the city limits make the air unbreathable with airborne sulfur dioxide, suspended particulates and lead. According to the data collected by the Panhellenic Center for Ecological Research, after painstaking research and studies, which are known to the responsible officials, the fertilizer plant alone releases into Piraeus' atmosphere 25,000 tons of sulfur dioxide a year. The "ration" of every citizen of Piraeus is 140 grams of "pure" sulfur dioxide per day!

The president of the Center, Mr. P. Khristodoulakis, told us: "When we talk about Piraeus we cannot simply talk about an air pollution or pollution. The situation there can be expressed with only one word: Death!

"The air" he continues, "has reached the point of containing 1,300 micrograms of sulfur dioxide per cubic meter while the highest permissible international limit is of 80 micrograms. Counts of 8.9 photometric units of smoke have been taken when the limit is one unit. Do not even talk about the suspended particulates, dust, etc. While the highest permissible limit is 200 micrograms per cubic meter, in Piraeus we have counted 2,500 micrograms."

These frightful figures have their sad repercussion in illnesses and death. By comparing the official data of IKA [Social Insurance Foundation] and Piraeus' Vital Statistics Bureau we find that:

During the five-year period 1971-1976, 63,000 persons were admitted to hospitals for respiratory ailments and 79,000 persons with cardio-vascular diseases. During the five-year period 1976-1981, the respiratory ailments reached 172,000 admissions and the cardio-vascular diseases 193,000. That is, the ailments had tripled.

The increase in pulmonary cancer, which affects inhabitants of Piraeus, is also impressive. It almost quadrupled in four years. From 2,217 victims in 1977, we reached 7,983 in 1981.

"These almost unbelievable numbers," the president of PAKOE [Panhellenic Center for Ecological Research] told us, "have created the need to study the relation of mortality to the pollution of the air in Piraeus. Thus, the scientists of the Center made studies and research under the supervision of Mr. Trikhopoulos, professor of epidemiology at the university.

The Harbor

The air pollution is the most serious, but not the only problem of Piraeus. The second great scourge is the pollution which has totally deprived of life the waters and threatens the people directly. We are not talking only of the harbor where conditions could be considered "physiological" because of the high ship movement. The pollution of the sea is general in Piraeus.

Beyond the pollution, which is inevitably caused by ships and the traffic and installations of the large port, there are two main reasons which not only have destroyed the waters, but have turned them into foci of disease:

The Akrokeramos at Keratsini, which discharges all the wastes of the Basin;

The two "closed" coves of the city, Pasalimani and Tourkolimano--especially Pasalimani--where 70 sewers discharge their wastes!

The putrefaction and pollution in these two coves have reached such a point that they emit an unbearable stench caused by hydrosulfuric acid which is produced in great quantities. Young students very frequently faint in the schools located around them. Charges are filed almost daily, but no concern is shown and, naturlaly, no corrective measures are adopted.

The Beaches

We mention the most typical situation: This summer at the two public beaches--Freattyda and Votsalakia--25,000 colobachter [eserichia coli] were counted in 100 cubic centimeters of water. In order to perceive the extent of the danger, we must say that, internationally, if there are waters containing more than 100 E. coli bacteria in the same measure of water, they are considered polluted and, naturally, closed to the public. The 25,000 bacteria(!) which were counted in Piraeus should have sounded the alarm. Nevertheless, the City continues to use the two beaches and is indifferent to the terrible dangers...

"These are the first things which must be dealt with immediately in the city. The issue of polluting industries, which is the most serious, must be dealt with in the long run, otherwise Piraeus will die!"

Nikaia. A large neighborhood with more than 110,000 inhabitants. A commercial center with 3,720 shops. A big city, almost, which pays heavy dues to the contemporary scourge called pollution. Within its municipal boundaries four industries and 43 handicraft industries, most of them pollution-generating, make their heavy contribution to the impressively shortnened lifespans.

Continuous measurements taken in the area in 1982 show that the pollution is at rates up to four times higher than the highest permissible limits.

Smoke was found to be 3.8 photometric units, sulfur dioxide 230 micrograms, nitrogen dioxide at 397 and the suspended particulates at 753 micrograms.

The mayor of Nikaia, Mr. Logothetis stated that the problem is acute because of the increased pollution which is generated by the heavy industries. Lately a new scourge was added to it, stench from dangerous substances which causes fainting and comes from the refinery at Aspropyrgos.

"We held meetings and sent reports to the responsible ministries," the mayor told us. From the information we have up to now, no effort has been made, at least to find out the sources of the additional pollution which is so dangerous and causes fainting and other disfunctions in the bodies of the residents of the area.

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Worldwide Report

ENVIRONMENTAL QUALITY

No. 376

JOINT PUBLICATIONS RESEARCH SERVICE
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9 November 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 376

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DARLING RANGE STUDY GROUP REPORT MAKES RECOMMENDATIONS

Call for Public Input

Perth THE WEST AUSTRALIAN in English 17 Sep 82 p 4

[Text]

THE WA Government has been told that people should have more opportunity to contribute to decisions on land-use in the Darling Range

A report by the Government - appointed Darling Range study group says that there is no adequate system for the public to take part in decision-making at departmental level.

More communication and consultation with interested groups could help both sides.

Examples included planning for an aluminium smelter, rehabilitation of coal-mining areas, options for solving the Wellington salinity problem, review of bauxite mining plans and management objectives for State forests and water supply catchments.

The report, released yesterday, recommended that all departments be required to give notice of intention to build major works or to cause significant changes in land use in the 1,346,000 hectare study area.

[The area stretches from the Helena catchment in the north to the Collie catchment in the south and is bounded on the west by the Darling Range and on the east by a line joining the eastern extremities of the two catchments.]

The report said that notices in newspapers should invite objections or submissions well in advance of projects. Full consideration of all issues should be allowed.

On sensitive issues, public debate should be encouraged through the use of information papers similar to the British parliamentary white and green papers.

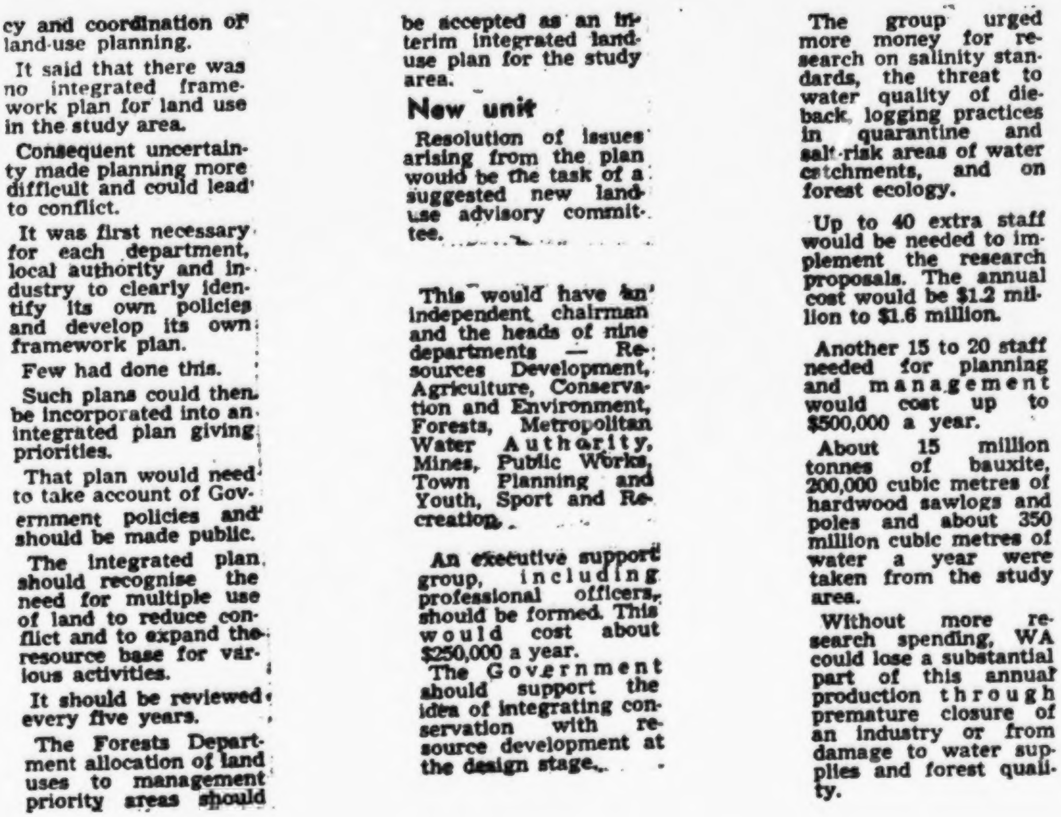
Suspicion

Lack of communication led to uncertainty, confusion and suspicion.

There was considerable confusion and worry among people with an interest in the future of the Darling Range.

The study group thought that more community access to information and wider public debate on issues, values and objectives would benefit the Government and the people.

The group, headed by Mr W. D. Benson, started work in January 1980 on a wide-ranging study with a brief to advise on poli-



cy and coordination of land-use planning.

It said that there was no integrated framework plan for land use in the study area.

Consequent uncertainty made planning more difficult and could lead to conflict.

It was first necessary for each department, local authority and industry to clearly identify its own policies and develop its own framework plan.

Few had done this.

Such plans could then be incorporated into an integrated plan giving priorities.

That plan would need to take account of Government policies and should be made public.

The integrated plan should recognise the need for multiple use of land to reduce conflict and to expand the resource base for various activities.

It should be reviewed every five years.

The Forests Department allocation of land uses to management priority areas should be accepted as an interim integrated land-use plan for the study area.

New unit

Resolution of issues arising from the plan would be the task of a suggested new land-use advisory committee.

This would have an independent chairman and the heads of nine departments — Resources Development, Agriculture, Conservation and Environment, Forests, Metropolitan Water Authority, Mines, Public Works, Town Planning and Youth, Sport and Recreation.

An executive support group, including professional officers, should be formed. This would cost about $250,000 a year.

The Government should support the idea of integrating conservation with resource development at the design stage.

The group urged more money for research on salinity standards, the threat to water quality of dieback, logging practices in quarantine and salt-risk areas of water catchments, and on forest ecology.

Up to 40 extra staff would be needed to implement the research proposals. The annual cost would be $1.2 million to $1.6 million.

Another 15 to 20 staff needed for planning and management would cost up to $500,000 a year.

About 15 million tonnes of bauxite, 200,000 cubic metres of hardwood sawlogs and poles and about 350 million cubic metres of water a year were taken from the study area.

Without more research spending, WA could lose a substantial part of this annual production through premature closure of an industry or from damage to water supplies and forest quality.

Land-Use Issues

Perth THE WEST AUSTRALIAN in English 17 Sep 82 p 4

[Text] The [WA Government-appointed Darling Range] study group has listed 21 land-use issues which is says government will need to decide within about 20 years.

It has ranked them into categories--issues needing decisions within a year, five years, 20 years and beyond.

The issues needing decisions within a year included:

--Bauxite mining strategy at Del Park, where mine sites had raised complex issues involving mining in healthy forests, in quarantine areas and near the Dwellingup townsite close to important tourist routes.

--Trial mining in the salt-risk zone.

--Mining near reservoirs.

--Establishment of an aluminium smelter.

--Mine site rehabilitation at Collie.

--Water sources other than the Wellington reservoir where salinity had increased.

--Mineral exploration in State forests.

The report recommended that approval for an aluminium smelter in the South-West should include strict controls on fluoride emission.

Before a site for a smelter was decided all land users should be given time to assess its effects on other productive uses in the region.

There should be a conservative approach to Alcoa's proposals to mine near water-supply reservoirs till existing trial areas had experienced a severe test in years of above-average rainfall.

Mining companies at Collie should be required to prepare plans for local extraction and rehabilitation for integration with current and proposed department plans.

The plans should be circulated to the Environmental Protection Authority and other departments for comment before release.

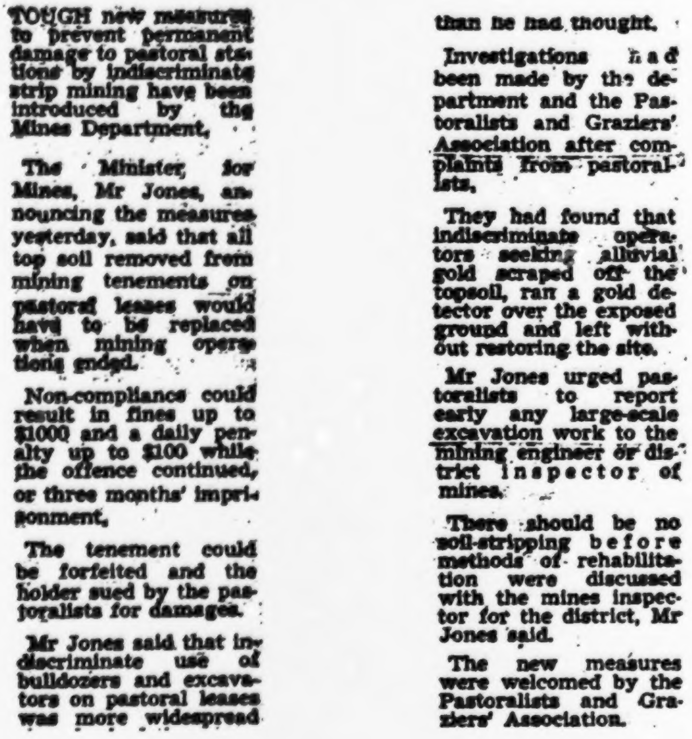
The report said issues needing continuous review included forest management policies, rehabilitation of mined areas, policies for landscaped conservation on private land, recreation on water supply catchments, urban development on catchments, conservation of productive agricultural land, release of land for agriculture, and construction of public utilities.

CSO: 5000/7507

TOUGH NEW STRIP-MINING CONTROLS IMPOSED BY GOVERNMENT

Perth THE WEST AUSTRALIAN in English 17 Sep 82 p 14

[Text]



TOUGH new measures to prevent permanent damage to pastoral stations by indiscriminate strip mining have been introduced by the Mines Department.

The Minister for Mines, Mr Jones, announcing the measures yesterday, said that all top soil removed from mining tenements on pastoral leases would have to be replaced when mining operations ended.

Non-compliance could result in fines up to $1000 and a daily penalty up to $100 while the offence continued, or three months' imprisonment.

The tenement could be forfeited and the holder sued by the pastoralists for damages.

Mr Jones said that indiscriminate use of bulldozers and excavators on pastoral leases was more widespread than he had thought.

Investigations had been made by the department and the Pastoralists and Graziers' Association after complaints from pastoralists.

They had found that indiscriminate operators seeking alluvial gold scraped off the topsoil, ran a gold detector over the exposed ground and left without restoring the site.

Mr Jones urged pastoralists to report early any large-scale excavation work to the mining engineer or district inspector of mines.

There should be no soil-stripping before methods of rehabilitation were discussed with the mines inspector for the district, Mr Jones said.

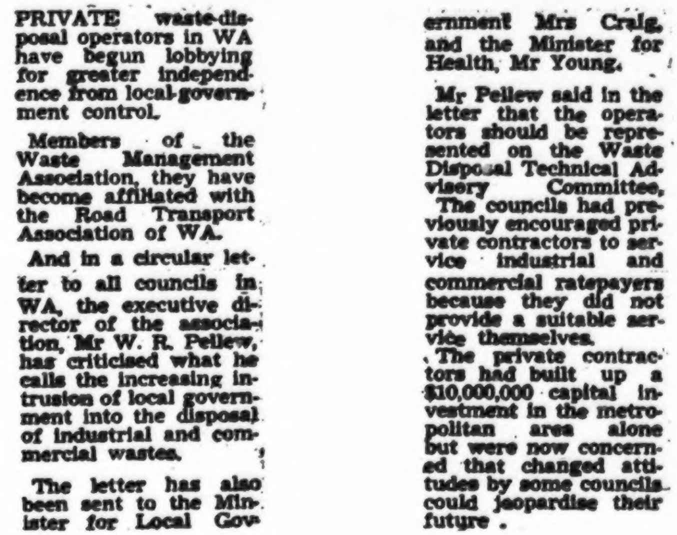
The new measures were welcomed by the Pastoralists and Graziers' Association.

CSO: 5000/7507

WA WASTE DISPOSAL OPERATORS SEEK RELAXATION OF CONTROLS

Perth THE WEST AUSTRALIAN in English 3 Sep 82 p 30

[Text]



PRIVATE waste-disposal operators in WA have begun lobbying for greater independence from local-government control.

Members of the Waste Management Association, they have become affiliated with the Road Transport Association of WA.

And in a circular letter to all councils in WA, the executive director of the association, Mr W. R. Pellew, has criticised what he calls the increasing intrusion of local government into the disposal of industrial and commercial wastes.

The letter has also been sent to the Minister for Local Government Mrs Craig, and the Minister for Health, Mr Young.

Mr Pellew said in the letter that the operators should be represented on the Waste Disposal Technical Advisory Committee.

The councils had previously encouraged private contractors to service industrial and commercial ratepayers because they did not provide a suitable service themselves.

The private contractors had built up a $10,000,000 capital investment in the metropolitan area alone but were now concerned that changed attitudes by some councils could jeopardise their future.

CSO: 5000/7506

LOGGING OPPONENTS, LOGGERS SAID TO RESORT TO VIOLENCE

Conflicting Charges in NSW

Brisbane THE COURIER-MAIL in English 3 Sep 82 p 11

[Article by Bill Ord]

[Text] People protesting against logging in the Nightcap Range rainforest near Terania Creek in northern New South Wales had driven spikes into trees to endanger timber workers' lives, had thrown rocks at logging gangs and abused and threatened them, it was alleged yesterday.

Mr John McGregor-Skinner, the manager of Murwillumbah's Standard Sawmill which is handling the logs being taken out of the rainforest, said: "Claims by the so-called preservationists that their demonstrations are non-violent have been shown to be false by their own actions."

A spokesman for the protesters, Mr John Seed, of Lismore, said he could not believe the allegations.

"We are totally committed to non-violent action," he said. "If anything was done in the manner alleged by Mr McGregor-Skinner, it was without the knowledge or approval of the mainstream protest."

Mr Seed said that some protesters were about to lay charges of assault against members of logging gangs. "It's they who have been violent, not us," he said.

Spikes in trees

Mr McGregor-Skinner alleged that nails or spikes 15 to 20 centimetres long had been driven into trees marked by the NSW Forestry Commission for felling.

"Whoever spiked those trees was aiming to hurt the logging workers. If a chainsaw hits a spike the chain will break up and fly everywhere with very great danger to anyone near the tree.

"If the tree is cut without the spike being noticed then other workers can be killed or maimed when the log is being sawn at the mill," he said.

Mr Seed said a number of protesters had been assaulted by logging workers.

"One of our people was chased by a worker with a brush-hook," he said. "Others have been punched and kicked. We've tried to play it cool but now I think we must seek the protection of the police and the law."

Arrest of Demonstrators

Canberra THE WEEKEND AUSTRALIAN in English 3 Sep 82 p 30

[Text] A THREE-WEEK stand-off between conservationists and police over plans to log a rain forest in far northern New South Wales came to a fiery head yesterday.

About two dozen protestors, mostly from local bush communes, were arrested when they tried to stop loggers moving into the Nightcap rain forest under police escort.

For the past three weeks many of the conservationists have been camped on Mt Nardi, just outside Nimbin, a two-hour drive across the border from the Gold Coast.

Early yesterday morning they shifted camp to a logging road that foresters have been using to take timber from the lush Nightcap rangers.

When the loggers tried to move in heavy equipment they met with a dual blockage.

The conservationists had parked about 40 vehicles across a winding dirt road leading to the rain forest, making it impossible for anyone to pass.

They moved about a kilometre down the track and defied requests from police to clear the access road.

There was a two-hour standoff while police called in reinforcements, including paddy wagons.

Uniformed men then moved in and the protesters were told they would be arrested if they did not clear the track.

CSO: 5000/7506

SYDNEY AIR POLLUTION SETS RECORD; LAWS ON BACKYARD FIRES EYED

Sydney THE SYDNEY MORNING HERALD in English 2 Sep 82 p 3

[Article by Richard Eckersley]

[Text] Laws controlling backyard fires are being reviewed after the worst month on record for air pollution.

The Minister for Planning and Environment, Mr Bedford, said yesterday that pollution had been high on 20 days in August, the most recorded over one month since the Sydney Pollution Index began in December, 1977.

The index measures brown haze in winter and photochemical smog in summer.

Mr Bedford compared the 20 days of high air pollution last month with an average of seven per month in winter and four per month in summer.

The high number of polluted days was caused by unusual atmospheric patterns.

Sydney missed out on the strong westerly winds common in August. Light winds and cool cloudless nights have trapped pollutants in shallow temperature inversions over Sydney overnight and for several hours next morning.

Mr Bedford said Sydney's brown haze was composed of fine particles emitted by vehicles, industry and backyard fires.

The State Pollution Control Commission would survey community attitudes on backyard burning during Earth Week, September 19 to 25.

"The information gathered from the survey will be used in a review of the laws controlling backyard fires," he said.

"Backyard fires contribute 45 per cent of the impairment to visibility caused by brown haze. In some suburbs, particularly on Saturday and Sunday evenings, the smoke from backyard fires contributes more than 90 per cent of the haze.

"When high air pollution is forecast people should minimise backyard burning."

Mr Bedford said the small particles in the haze were reason for concern even though the health effects are uncertain.

CSO: 5000/7506

LABOR PARTY PROMISES TOP PRIORITY TO BEAUTIFYING BRISBANE

Brisbane THE COURIER-MAIL in English 3 Sep 82 p 11

[Article by Bill Ord]

[Text] **ONE of the first priorities of a federal Labor government would be to fund a "beautify Brisbane" project.**

Announcing this in Brisbane yesterday, Labor's federal environment spokesman, Mr West, said that not only Brisbane but also many other cities and towns would be given Commonwealth Government grants to help them clean up pollution and finance a wide range of other conservation measures.

"Because most of these projects would be labor-intensive, the program would generate many hundreds, perhaps thousands, of jobs and other economic benefits quite apart from the environmental and aesthetic aspects of the project," he said.

"Local authorities like the Brisbane City Council are as strapped for funds as anyone else in the current disastrous economic climate and, however much they would like things to be otherwise, they just haven't got the money to do what they would like to do and what should be done in the area of conservation and beautification.

"A Labor government would provide the 'seed money' to help them do that job: It won't be a make-work program just for the sake of creating employment.

"It will provide community benefits as important in the long-term as roads, power stations and any other public utility."

Yesterday morning Mr West toured some of the greater Brisbane area's environmental black spots with the Australian Labor Party's candidate for the federal electorate of Petrie, Mr Deane Wells.

These included Cabbage Tree Creek, Little Cabbage Tree Creek and Downfall Creek.

Mr West said: "They'd have to be first cab off the rank for a clean-up."

In the afternoon, the Queensland ALP president, Dr Denis Murphy, flew him over Moreton Island to make an aerial inspection of the proposed sand mining sites.

"I'm more than ever convinced of the wisdom of the ALP policy against sand mining there,"Mr West said.

"A Labor government would not issue an export licence for Moreton sands or minerals. If a licence had been already given, we'd revoke it. What's good for Fraser Island is good for Moreton.

"We also had a good look at the damage the miners have done on North Stradbroke and it horrified me."

CSO: 5000/7506

EDITORIAL EXAMINES SHANNON BASIN CONSERVATION ISSUE

Perth THE WEST AUSTRALIAN in English 1 Sep 82 p 6

[Editorial]

[Text] **THE LABOR PARTY** in WA was up the Shannon River without a paddle when its State conference took a decision on Monday to retain a hardline conservationist stand on the river basin. An unqualified commitment to a 500-square-kilometre national park in the area would have been a heavy electoral liability.

The three seats affected by such a decision—Warren, Bunbury and Mitchell—are considered vital to the ALP's chances of winning power next year.

A deft retrieval yesterday, however, has enabled the ALP to salvage something from a situation brought about as much by confusion as by commitment to principle. A compromise proposal, in the form of an addition to the party's industrial development platform, commits Labor to maintaining the resource base of the timber and woodchip industries outside the Shannon basin so that no jobs will be lost. The move will give Labor talking points to try to woo the votes of both environmentalists in the city and timber workers in the South-West.

But the balance between conservation and economic development that good forest management requires has been knocked sideways by the Shannon River policy, which calls for nearly 85 per cent of the basin to be declared a national park.

Is it really necessary for so much of a valuable natural resource to be rendered unavailable? With proper management there is no reason why logging and forest preservation cannot go hand in hand in the Shannon basin for many years to come. The Forest Department's management plan for the basin will provide, once the proposed D'Entrecasteaux national park is established, for 40 per cent of the area to be preserved from logging, and that would appear to be a sensible compromise.

A disturbing aspect of Labor's decision is that it pre-empts the Environmental Protection Authority's report on the area due for release soon. A decision taken without the benefit of that report smacks of arbitrariness, of conservation for its own sake without thought to the consequences.

Even as amended, the party's policy for an area that is already economically depressed, and is being made increasingly more nervous as the timber-industry slump continues and mills are shut down, will be electorally damaging.

CSO: 5000/7506

YARRA RIVER AREA FIRST IN VICTORIA TO GET SPECIAL PROTECTION

Melbourne THE AGE in English 7 Sep 82 p 15

[Article by Rosslyn Beeby]

[Text] The Bend of Islands district on the Yarra River, near Kangaroo Ground, has been declared Victoria's first environmental living zone.

The new zoning, which involves strict environment protection and, planning controls, was announced yesterday by the Minister for Planning and Conservation, Mr Walker.

Under the new controls, houses built in the zone must suit the environment, and colors used on roofs and cladding must blend harmoniously with the bush surroundings.

Pets, including horses and goats, are forbidden, and the area of land that can be cleared on each allotment is strictly limited. Apart from clearing an area to build a house, residents are restricted to a small kitchen garden and a fenced area for livestock. The only plant species permitted, excluding those in the kitchen garden, are those native to the Yarra Valley region.

Local residents, including artist Neil Douglas, and the Bend of Islands Conservation Association, worked with Government planning authorities to frame the restrictions. The controls will be enforced by the Shire of Healesville.

Mr Walker said the planning controls were a response to "the sensitive and special nature" of the Bend of Islands. He said he had visited the area several times and was impressed by local conservationists' efforts to preserve the area and control the impact of subdivision and development.

He said it was encouraging to see the people committed to preserving their environment and being good land managers.

About 68 families live in the 750-hectare zone, which has been divided into 140 allotments. The new controls will prevent any further subdivision into areas smaller than 40 hectares.

A spokeswoman for the Ministry for Conservation said yesterday that no other area in Victoria was being considered for the new zoning and that it was likely to be "a one-off" classification in recognition for work done by Bend of Islands' residents.

CSO: 5000/7506

CLASH FOLLOWS WA APPROVAL OF MINING IN STATE FOREST

Canberra THE WEEKEND AUSTRALIAN in English 25-26 Sep 82 p 3

[Article by Steve Harvey]

[Text] A CLASH between conservationists and the West Australian Government is looming following a decision to open up parts of two million hectares of State forest for mineral exploration and mining.

The entire south-western State forest area has been quarantined since 1971 to prevent the spread of die-back disease, which was rapidly killing off jarrah trees.

A major pegging rush is now expected as mining companies send exploration teams into the forest to peg areas which are considered good prospects for coal discoveries.

Major coal finds have already been made in the south-west region outside the State forest area.

Conservationists reacted angrily yesterday, describing the Government's decision as "disgusting" and "ludicrous".

They expect a ground swell of public opinion against the Government as the full impact of the decision is realised.

A spokesman for the Campaign to Save Native Forests, Mr Simon Neville, said yesterday that the Government decision could only result in the large-scale spread of die-back disease, which would seriously threaten the future of the forest.

'Ludicrous'

"Opening the forest for mining makes a mockery of all their previous attempts at proper management of the environment," he said.

"It's a well known fact that die-back is spread by human intrusion into forests, and no doubt the decision will cause the disease to spread further.

"It's ludicrous to think that for the past five years the Government has protected forests from die-back and now they are going to open them up to mining.

"Mining of forests will jeopardise their other multiple uses, such as water supply, wood production and recreation.

"The Government has made an incomplete analysis of the long-term problems that may result from destroying forests.

"It's a perfect example of the Liberal Government going ahead with major development at any cost and despite the long-term consequences."

Announcing the decision, the Premier, Mr O'Connor, said that the release of areas of State forest would be subject to conditions agreed to by the respective ministers.

He said applications from mining companies for areas would close in the middle of next month.

CSO: 5000/7508

BRIEFS

HERBICIDE PROTECTION LAW--State Government legislation is being sought to protect people's civil rights against health defects caused by aerial herbicide spraying. The Maroochydore Industry and Development Association is planning to lobby Sunshine Coast authorities and state politicians, including the Primary Industries Minister, Mr Ahern. It wants spraying legislation introduced, probably under the control of the Lands Department, and a policing officer stationed on the coast. Aerial spraying of herbicides 24D and 245T, mainly to eradicate groundsel, is a controversial issue on the Sunshine Coast and has been the subject of a special report to Noosa Shire Council by Cr Joy Laurie. The MIDA spokesman, Mr Terry Read, said: "What we're looking for is to have legislation which will police the use of spraying so civil rights will be protected. "At present, the rights of crops and animals are protected, but there's nothing to protect humans." Mr Read said the MIDA sought support from major chemical companies on the issue. Cr Laurie, in her report, said "adverse effects" of herbicides on humans were "disturbing". She was critical of the State Government's failure to monitor dioxin concentration in chemicals. [Brisbane THE COURIER-MAIL in English 31 Aug 82 p 31]

NOOSA RIVER PARK--THE western catchment area of the Noosa River and lakes system is to be declared a national park. Eventually, the whole of the catchment area will become a national park. The National Parks and Tourism Minister, Mr. Elliott, said in Brisbane yesterday that State Cabinet had approved the move sought by the Noosa Parks Committee and other conservationist groups. The western area is largely declared state forest. It will be left untouched in future. When the Lands and Forestry Departments settles on a site near Maryborough for a replacement forest, and other administrative and legislative details are completed, the Noosa River National Park will be formally declared. Mr Elliott could not give a precise timetable for these steps "but they'll be made just as soon as possible". [Brisbane THE COURIER-MAIL in English 2 Sep 82 p 14]

ARCHAEOLOGISTS ON FRANKLIN DAM--THE Prime Minister, Mr Fraser, has ignored pleas from the world'smost eminent archeologists to use Federal Government powers to prevent the flooding of south-west Tasmania. Two of Australia's leading archeologists, Professor John Mulvaney and Dr Rhys Jones, said in Canberra yesterday Mr Fraser had not replied to at least 24 letters written to him by their colleagues at universities including Oxford, Cambridge, Yale, London and the University of California. Professor Mulvaney and Dr Jones released edited texts of these letters to Mr Fraser which stressed the significance to humanity of traces of Ice Age man found in limestone caves near the Franklin River since 1981. Professor Mulvaney said some of these archeologists had offered him their support in any Australian or international legal action that conservationists may take to force the Government to intervene in the Tasmanian Government's plans to build the Gordon-below-Franklin dam it estimates will cost $453 million, excluding post-construction interest payments. [Excerpt] [Canberra THE AUSTRALIAN in English 7 Sep 82 p 3]

CSO: 5000/7507

STEADY PROGRESS NOTED IN WATER CONSERVATION PROJECTS

Lanzhou GANSU RIBAO in Chinese 7 Sep 82 p 4

[Article by Chong Yi [6850 0001]]

[Text] Since the Third Plenary Session of the 11th Party Central Committee was held, the water and soil conservation work of Gansu Province has implemented the party Central Committee's guideline "readjusting, restructuring, reorganizing and improving" conscientiously on matters concerning strengthening of management and exploitation of potential and thus achieved further benefit from the existing water conservation facilities. At the same time, new facilities were constructed according to the actual capability of the province and concrete results were achieved.

In recent years, after the emphasis of water conservation work was shifted to better management, the emphasis was placed on discovering the weaknesses, reinforcing and eliminating risk from dangerous reservoirs, lining culverts, supplementing the field construction work and repairing mechanical and electrical equipment. As a result, various existing water resources were fully utilized, water was conserved, expanded irrigation results were achieved through planned water usage, and diversified operation was developed. A large amount of effort was spent on the establishment and strengthening of water conservation management responsibility system, especially in order to match the new rural situation, and good results were obtained. At the same time, the water conservation front also undertook the construction of some new facilities according to its actual capability. In the past 3 years or so, a total of 5 medium and small reservoirs were constructed, 2,250 km of high standard culvert was laid, 3,310 km of rural electric transmission line was built, more than 553,000 mu of irrigated field were added, more than 2,600 new auxiliary wells were dug, and some other projects were completed to provide drinking water for both men and animals, including more than 146,000 new wells which solved the drinking water problem for 470,000 people and 460,000 cattle and sheep.

The water and soil conservation work of this province put emphasis on the treatment of small river basins mainly by planting trees and growing grasses. From 1979, when the project was started, until the first half of this year, various projects related to the treatment of 34.89 million square kilometers of flood basin, afforestation of more than 3,134,800 mu, establishment of more than 202,700 mu of mountain forest reserve, more than 1,354,000 mu of grassed waste land, and more than 218,200 mu of mountain slope grass reserve have been completed. Construction of horizontal terraced fields, horizontal strip fields, compacted sandy fields, ditches and flood ditches has substantially progressed on the foundation established in 1978.

Within 3 and 1/2 years, according to incomplete statistics obtained by the concerned unit, the number of small river basins that have been treated has increased from 198 (river basins bigger than 10 square kilomers in area) in 1980 to 649 (including river basins bigger and smaller than 10 square kilometers in area) this year. The area scheduled to be treated this year alone reaches 410 square kilometers. An area of 277.24 square kilometers has already been treated in the first half of this year, amounting to 58 percent more than that accomplished in the same period last year.

9113
CSO: 5000/4102

POLLUTION LAWS FOR KELANI RIVER

Colombo SUN in English 8 Oct 82 p 1

[Article by Jennifer Henricus]

[Text] A massive anti-pollution drive to ensure that no poisons are emptied into the Kelani River has been jointly launched by the National Aquatic Resources Agency and the Ceylon Institute of Scientific and Industrial Research.

It was initiated at the Development Secretaries meeting on Tuesday, following conclusive evidence that the poison which killed thousands of fish in the river recently was an effluent from a manufacturing corporation located nearby.

The two scientific institutions will now closely monitor the 40 state and private industries located along the river. Any evidence of pollution above a standard that will be evolved by these two institutions will be a punishable offence.

A spokesman for NARA told 'SUN' that they will do fortnightly tests on the waters of the river at several selected spots. If the levels of chemicals and metals in the water are above a certain upper limit they will trace the poison to its source and the offender would be dealt with.

Provisions in the National Environmental Authority Act allows for the prosecution of those found polluting any natural resources which are of public use.

This action has been initiated chiefly because the Kelani waters are used for drinking purposes and serves Colombo and its suburbs. Any poisons in the water could enter the pipeline and will be hazardous to the millions of domestic users, the sources said.

CSO: 5000/4301

ENVIRONMENTAL PROTECTION INVESTMENTS EVALUATED

Prague HOSPODARSKE NOVINY in Czech 27 Aug 82 pp 8-9

[Article by Eng Josef Jirat, Candidate for Doctor of Science, Czech Planning Commission: "The Environment. Investment in Nature--But Also in People"]

[Text] In connection with the preparation of the Seventh 5-Year Plan, the Czech Planning Commission undertook, using all available planning and statistical information, the first independent and detailed analysis of investment activity related to environmental preservation in the CSR. All significant investment projects (chosen according to the budgeted costs of projects on which work has begun) related to the preservation of water and air quality and the utilization or destruction of wastes were analyzed. This analysis pointed to the main reasons for a worsening in environmental quality as well as possibilities for its gradual improvement in future years. The analysis did not include problems related to the preservation of the environment from noise pollution or thermal pollution, which to be sure, are not insignificant. To date, however, only relatively small amounts of investment have been devoted to these areas.

In addition to utility, human activity also brings increasing threats to and the pollution of the environment, and often the actual destruction of the environment in the broadest sense of this work; the pollution of the air, of water sources, and the disruption of the biological balance of an area. Our society has exceptionally favorable preconditions for a conscientious concern for the environment: a socialist social order, the planned development of the national economy, and legislative measures for environmental preservation which are among the best in the world. Nevertheless, our current development is creating significant problems related to environmental disruption. The consequences of neglecting the environment are usually not immediately evident, but are cumulative, acquire a qualitatively different form and crop up again much later and often in a completely unexpected sphere.

Back in 1974, the CSR Government announced, in Resolution No 315/1974, its agreement on the designation of the most important populated industrial areas of the CSR in which negative environmental effects are concentrated and where it is necessary to give priority to the solving of problems of environmental preservation (Prague, the North Bohemian Brown Coal Basin, the Ostrava-Karvin Basin, Sokolov-Karlovy Vary Oblast, and the agglomerations of Hradec Kralove-Pardubice, Brno and Plzen). Since 1980, this has included the Melnik-Kralupy-Neratovice oblast, according to CSR Government resolution No 76/1980.

At its third meeting in 1977, the CSR Government took responsibility for a set of measures for the long-range development of environmental preservation and enhancement in these oblasts. In terms of a concern for the environment the preconditions were thus created for granting preference to these oblasts over other parts of the CSR in national economic planning, capital investment, health and compensation measures, scientific and technical development, etc. At the same time, steps had been taken toward a more rational resolution of the entire complex of negative effects brought about by urban development on the environment and health of the residents of the CSR.

During the Sixth 5-Year Plan, 290 investment projects related to environmental preservation were started, with total budgeted costs of Kcs 7.7 billion (Kcs 4.4 billion of this for construction work--in current prices). This represents 3.5 percent of the total budgeted costs for construction projects begun during this period in the CSR. Of these, federal agencies initiated 120 projects with total budgeted costs of Kcs 4.4 billion (Kcs 2.4 billion of which was for construction).

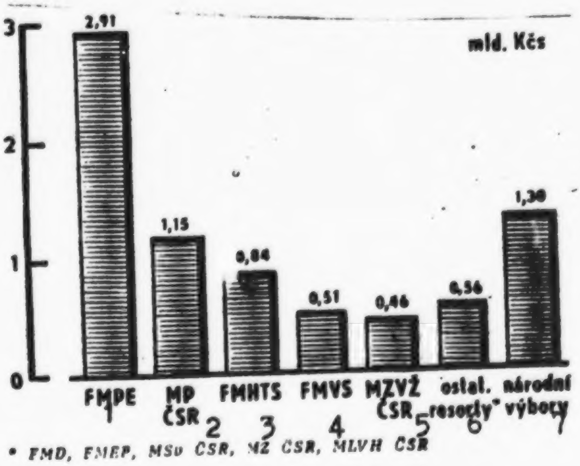
Each agency spent a percentage of this total roughly equal to its share of total environmental disruption (see Graph 1 on following pate). Each agency directed investment resources primarily to those areas in which its own activities most damaged the environment. Thus, for instance, the federal ministries of fuel and energy, of metallurgy and heavy engineering, and of general engineering devoted a decisive portion of these resources to the preservation of air quality. National committees, on the other hand, spent almost two-thirds of their total on preserving water purity, and the CSR Ministry of Industry almost equal amounts on the preservation of both of these major components of the environment (see Graph 2, on following page).

Water Purity...

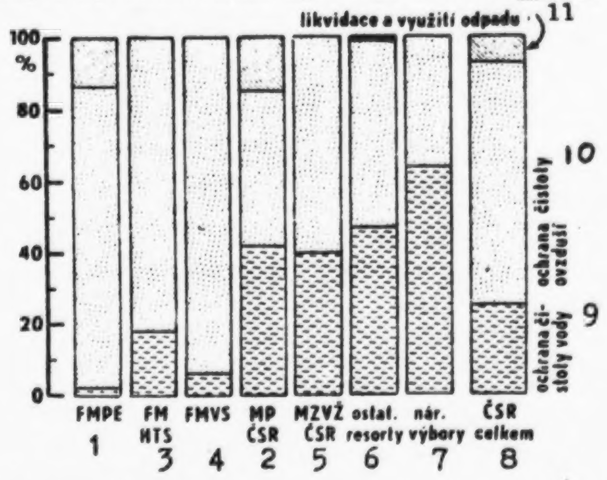
An increasing standard of living in conjunction with improved housing standards and growing water requirements has and continues to result in substantially increased quantities of polluted waste water. The rapid development of agriculture and its shift to mass-production organizational forms with the intensive utilization over broad areas of fertilizers and other chemical preparations for the elimination of weeds, pests and diseases has led to what is called a real contamination of surface and ground water. Relatively obsolete capital assets, the slow introduction of low-waste, or of no-waste production technologies and other factors have led to an increase in industry-generated pollution.

Water quality was also been influenced negatively by frequent instances of the accidental contamination of surface and ground water. The state water management inspectorate investigated during the last 5-year plan more than 1,100 accidents--the escape of petroleum products and of agricultural wastes. The main reasons for frequent accidents were above all the unsophisticated nature of the equipment for the storage, transportation and handling of these materials, but there have also been frequent human failures.

Graph 1: Investment in Environmental Preservation (Budgeted Costs in Billions of Korunas for the 1976-1980 period, by Individual Agencies)



Graph 2: Structure of Investment Utilization for Environmental Preservation (in percentages by individual agencies for the 1976-1980 period)



Key:
1. Federal Ministry of Fuel and Energy
2. CSR Fuel Ministry
3. Federal Ministry of Metallurgy add Heavy Engineering
4. Federal Ministry of General Engineering
5. CSR Ministry of Agriculture and Food
6. Other sectors; Federal Ministry of Transportation, Federal Ministry of Electrotechnical Industry, CSR Ministry of Communications, CSR Ministry of Agriculture, CSR Ministry of Forest and Water Management
7. National Committees 8. CSR total 9. preservation of water purity
10. preservation of air quality 11. waste destruction and utilization

Fully one-fourth of the total budgeted costs for initiated construction projects related to environmental preservation in the Sixth 5-Year Plan were earmarked to improve water purity. Construction was begun on 57 waste-water treatment facilities with total budgeted costs of Kcs 1.4 billion. Under the jurisdiction of national committees, one of the most important projects is the upgrading of the central waste-water treatment plant in Prague at a cost of Kcs 306 million, the expansion of the Bruntal treatment facility at a cost of Kcs 49 million, the beginning of construction in Jesenik and in Asi at a cost of Kcs 175 million and Kcs 69 million respectively. Under the CSR Ministry of Industry there is the first stage of the waste-water treatment plant at the Synthesia East Bohemian Metallurgical Plant in Pardubice at a cost of Kcs 148 million; under the CSR Ministry of Health is the facility at Galena Komarov at a cost of Kcs 51 million; and under the Federal Ministry of Metallurgy and Heavy Engineering, a treatment facility at the Bohumin Ironworks and Wire Factory for Kcs 61 million, etc. In addition, construction was begun on another 49 waste-water treatment plants as a part of Project Z with budgeted costs of under Kcs 2 million, and which were designed to solve local water pollution problems (in Pecky, Cernosice, Zakupy, Kozlovice, Tovacov, and elsewhere).

According to the CSR Ministry of Forestry and Water Management, during the Sixth 5-Year Plan 69 projects monitored by the plan and related to environmental preservation were completed, representing total budgeted costs of Kcs 1.4 billion, as well as almost 100 smaller scale treatment facilities under Project Z. For instance, a treatment facility was completed at the Zaluzi CSSP [Czechoslovak-Soviet Friendship Society] Chemical Plants for Kcs 126 million, and city treatment plants for Teplice in Bohemia at a cost of Kcs 70 million, in Humpolce for Kcs 37 million and in Svitavy for Kcs 100 million. Most of the larger projects which have been completed have met design specifications and, when proper attention is paid to the installed equipment, performance in excess of the design parameters has been successfully attained. Nevertheless, the contribution of the waste-water treatment plants which have just been built has not been sufficient to counterbalance the increase in pollution.

...Remains a Problem

The significant decline in waste-water treatment plant construction in the Sixth 5-Year Plan had a number of causes. Central investors included such projects in the construction plan to a lesser extent than in the previous 5-year plan. Attempts also occurred to resolve problems at the expense of water quality. Contracting organizations did not bid on the projects on the grounds that they did not have enough specialized construction equipment, that there were difficulties in acquiring materials, and perhaps as well out of fear due to the technical sophistication of these projects (they require very high-quality work, considerable labor input, and often demand deliveries of hard-to-acquire technology--especially of subcontracted components necessary for project completion. The procurement problems of contractors also interacted with design problems and resulted finally in the exclusion of certain projects from the plan. While some projects were excluded from the plan proposal, at other sites where construction had begun, construction activities were limited because of the need to transfer workers to more important projects or because of shortages of materials, both of which served to prolong construction schedules significantly.

The unfavorable development of water pollution was also influenced by other factors. For instance, shortcomings in design preparation or in the operation of these facilities made it impossible at some newly completed facilities to achieve, over the long term the requisite and necessary performance (Novy Bor). Several treatment facilities built before 1970 had become obsolete and, in particular, certain urban plants soon ceased to be adequate for reasons of capacity (Ceske Budejovice, Plzen, Tabor, Olomouc).

Restricted deliveries of the appropriate machinery, equipment and materials made it more and more complicated to upgrade these treatment plants. For various reasons, it was necessary to put off the projected cessation of operation of several factories with obsolete production equipment (sugar factories, starch factories, etc.), where the construction of new treatment facilities would not have been efficient. Inspection organs, however, also determined that certain treatment facilities were not being used to their full capacity. This had come about because of inadequate and negligent servicing of the equipment, the delayed hookup or construction of new factories, sewage lines, and the like.

Weapon Against Emmissions

Exceptional attention was devoted during the Sixth 5-Year Plan to the preservation of air quality. One hundred ninety projects were begun with budgeted costs of Kcs 5.2 billion, representing 68 percent of the total budgeted costs for initiated construction projects related to the environmental preservation. This is understandable because an economy with a large installed energy-generation capacity in which the primary source of 80 percent of the generated energy is domestic, largely low-quality coal necessarily exerts a negative influence on air quality. At the same time, the distribution of emissions in the CSR is very uneven, basically correlating with the main industrial centers which depend on the mining and use of coal (above all for electric energy generation).

Steps to assure air-quality protection are conditioned by the following considerations:

--the main source of air pollution is combustion, which generates about three-fourths of all solid and gaseous emissions,
--the reduction of solid emissions to an acceptable level is technically feasible, but a reduction in gaseous emissions (97 percent of which are sulphur dioxide) at the critical sources of pollution (electric power plants and heating plants) is a serious problem in view of the quality of the coal which is burned.

Increased concern for air quality has brought positive results. During the 5-year plan solid-emission separator devices were rebuilt and modernized at several large and small sources of air pollution. This was the case at two units of the Ledvice power plant, where there was a reduction in solid emissions of 13,000 tons, by two units of the Tusimice I power plant (a reduction of 4,000 tons per year), at five units of the Tisova I power plant (a reduction of 11,000 tons per year), at Five units of the Melnik I power plant (a reduction of 12,000 tons per year), and for all six units at the Opatovice power plant (a reduction of 15,000 tons per year), etc.

Special attention is continually being devoted to the resolution of the complex of problems connected to the reducing of sulphur dioxide emissions at the largest power plants. After evaluating all known and accessible methods, the Soviet magnetization technique appeared to be the most appropriate for us. The combustion byproducts are separated from the sulphur dioxide, dried, and the resulting magnesium sulfite crystals are broken down to produce sulfuric acid. An experimental operational unit should be installed on a 200-MW unit at the Tusimice II power plant.

The desulfurization of combustion byproducts does not apply solely to power plants, but also for other significant sources of emissions. At the A. Zapotocky Fuel Combine in Uzin the most appropriate technology has been tested for the desulfurization of expansion gases, and construction has been scheduled to start in 1982. At the Chomutov Tube Rolling Mills and Ironworks, construction with budgeted costs of Kcs 64 million has been started on equipment for the desulfurization of generator gases.

Solution: Centralization of Heating

A very progressive technique for improving air quality, especially in large industrial agglomerations, is the centralization of heat sources, thereby eliminating scattered sources of air pollution. During the last 5-year plan, the greatest percentage of resources were allocated to these measures with the budgeted costs of construction projects which were started reaching Kcs 2.5 billion. In the Sixth 5-Year Plan, construction was completed on the Komorany heating plant (cost, Kcs 90 million), on the Liberec heating plant at a cost of Kcs 188 million, on the Teplice plant for Kcs 114 million, etc. Construction was begun, for example, on the Brno North heating plant for KCs 244 million, the Trmice III plant for Kcs 139 million, the Mile II plant for Kcs 121 million, and the Holesovice III plant for Kcs 282 million. In 1980, construction was begun on the Plzen II heating plant for Kcs 492 million When finished, this plant will not only provide heat to new apartment complexes, but also make it possible to eliminate 2 heating plants, 21 medium-pressure steam boilers, and 220 apartment house and other boiler units, most of which are operating with obsolete equipment. This will reduce the level of solid emissions in the city by about 53,000 tons per year. The centralization of heating and the resulting elimination of decentralized sources has been among the most successfully implemented measures related to environmental protection.

Among the most effective air-quality protection measures has been the replacement of solid fuels with enriched energy forms. Such projects have been implemented primarily in cases of smaller sources of pollution and have resolved problems especially in older built-up areas.

Despite the limited availability of enriched fuels, a number of projects have been successfully implemented, especially in industrial locales. The tunnel kilns at the Karlovarsky Porcelan factory in Most were converted to gas, as were the boilers at the J. Fucik sanatoria in Teplice and the Vysocany factory of Ceskomoravska Kolben Danek in Prague. The boilers at the Bystrany Electrotechnical Factories, the Horny Slavkov factory of Karlovarsky Porcelan and at the Meat Industry plant in Pribram were all converted to light heating oil. Numerous boilers of the Prague housing management office and in the cities of the North Bohemian Brown Coal Basin and elsewhere were converted to both of these forms of energy.

Other investment projects had considerable significance, even if only locally, for an improvement in air quality. These include the elimination of emissions from the production of synthetic fibers at the Neratovice Spolana plant at budgeted costs of Kcs 135 million, which led to a reduction in gaseous emissions of 4,050 tons per year, the construction of equipment for dust removal from the rotary kilns and clinker coolers at the Radotin Cement and Lime Works for Kcs 52 million (reducing dust emissions by 1,300 tons per year), the selective reduction of oxides of nitrogen at the Lovosice Central Bohemian Metallurgical Plant for Kcs 42 million (reducing gaseous emissions by 4,000 tons per year), the dedusting of the furnaces at the Kladno United Steel Works national enterprise and at the Trinec Ironworks of the Great October Socialist Revolution, as well as tens of other instances of the rebuilding of boilers or of their replacement in the housing management sector and in factories of all production sectors (the Mnichovo Hradiste Fruta factory, the Kynzvart sanatorium, the Dukla factory of Ceskomoravska Kolben Danek in Prague, etc.)

Assessment of Assets and Liabilities

Measures which were adopted and carried out during the Sixth 5-Year Plan did not, however, compensate fully for the increase in emissions (see graph 3).

In spite of increased inspection activity by the Czech Technical Inspectorate for Air-quality Protection, national committees and the health service, and the more consistent application of economic instruments which became evident in the improved maintenance, servicing and operation of air-quality protection equipment, we were unsuccessful in limiting sufficiently the growth in emissions generated by the overall growth of industrial construction. Increases in emissions occurred in spite of extensive measures taken in large electric power plants, in factory energy generation and in certain operations connected with the metallurgical industry.

An especially unfavorable factor has been a shortage of facilities for the production and maintenance of separator equipment (even though the conditions have been created, for instance, for the gradual expansion of the repair facilities at Usti nad Labem) and a shortage of certain spare parts.

Deliveries of new separators have been directed above all to the outfitting of newly constructed factories and the rebuilding of this equipment at some of the most serious sources of pollution. However, a significant percentage of the existing separators have already outlived their planned useful life of 10 years, resulting in increased amounts of downtime and reduced time in use. It is estimated that during the Sixth 5-Year Plan roughly 70 percent of the total need for solid-emission separators was covered by the Milevsko Plants for Production of Air Technology Equipment.

The quality of the coal that is being burned clearly also has a negative impact on the amount of emissions. Small and medium-sized heating plants with boilers designed to run on sized coal, but also large users burning energy coal in pulverized fuel-fired boilers have often been supplied with coal of inferior quality and a higher than specified percentage of both ash and water. The average heat value of the fuel has declined below the established limit and the consequent more permanent installation of stabilizational oil burners had a negative impact on the operation of the separators, and especially the electrostatic precipitators.

What About the Waste

In the area of the destruction and utilization of wastes, 20 projects were started in the past 5-year plan with total budgeted costs of Kcs 560 million (7 percent of the total budgeted costs for environmental protection). Seven projects were completed at a cost of Kcs 310 million. They were concerned primarily with the destruction of industrial wastes in the fuel and energy sectors and in industry. In most cases, their completion was a condition for the further uninterrupted operation of production equipment. This was the case in the building and expansion of tailing ponds for the ashes and cinders from electric power plants (in the North Bohemian Brown Coal Basin), ash dumps (e.g., for the Ceske Budejovice power plant and the Zaluzi chemical factories, etc.). In addition, a number of dumps have been established for solid wastes under Project Z and the related sublimit investments of national committees.

Most solid wastes have been transported to dumps. The number of managed dumps, especially those under central management, has been unsatisfactory, and the percentage of unofficial dumps has remained too large.

Future Measures

In accordance with CSR Government Resolution No 315/1974, priority has been given to the resolution of environmental protection problems in the main industrial regions of the CSR. We have successfully set up a systematic approach to a concern for the environment. To be sure, certain differences have arisen in the meeting of specific objectives among the North Bohemian Brown Coal Basin, Prague, the Ostrava-Karvin Basin and the other designated areas, but they have for the most part corresponded to the differing complexities of environmental problems in each area.

An analysis of investment activity related to environmental protection has shown that even given the limited possibilities of the national economy, significant resources were devoted to environmental protection in the CSR during the Sixth 5-Year Plan. (see following)

Nevertheless we have not been successful in stopping the negative trend in water and air pollution. The growth of sources of pollution has been relatively rapid, but the implementation of significant projects is for the most part a long-range endeavor, and any positive outcomes from them will become evident only in the upcoming 5-year plan. Moreover, the number of initiated projects in terms of their overall costs indicates the necessity of more greatly differentiating between resources, and concentrating the available resources above all on projects which promise to have a rapid and substantial impact. The assurance of enough spare parts and assembly facilities is also a big problem.

Investments in Environmental Protection in the Sixth 5-Year Plan

Locale	Number of Projects	Budgeted Costs (in millions of korunas)
Prague	29	1,050
North Bohemian Brown Coal Basin	40	1,040
Plzen	4	790
Ostrava-Karvin Basin	20	570
Melnik-Kralupy-Neratovice	8	500
Brno	6	420
Hradec Kralove-Pardubice	17	420
Sokolov-Karlovarska oblast	8	180

Note: 1. The above locales accounted for 48 percent of total CSR investment in water quality, 69 percent of total CSR investment in air quality, and for 81 percent of total CSR investment in waste destruction and utilization.
2. The level of costs in Plzen is affected by the investment-intensive construction of the Plzen heating plant, costing half a billion korunas. In Sokolov-Karlovy Vary Oblast, new projects of relatively low budgeted costs were begun, but here, too environmental problems are being intensively worked on.

Source: calculations by the author

The governments of the CSSR and the CSR have also discussed the condition of the environment and further developments in the Seventh 5-Year Plan. The CSSR Government, in Resolution No 252/1980, and the Government of the CSR in Resolution No 245/1980, both concerning the Report on the Current Condition of the Environment and on Measures to Enhance and Protect It, have both approved a set of measures to resolve these problems. The limiting of investment flows and a significant reduction in new construction starts could not, however, remain without an impact on the original intentions and measures related to resolve these problems. The limiting of investment flows and a significant reduction in new construction starts could not, however, remain without an impact on the original intentions and measures related to

environmental protection. Nevertheless, in this 5-year plan some successes have already been achieved in resolving the problems of environmental protection. These include:

--the beginning in 1981 of 35 construction projects related to air and water quality and to the destruction or use of wastes, with total budgeted costs of more than Kcs 500 million.

--the completion in 1981 under the jurisdiction of national committees of 28 construction projects related to water and air quality with total budgeted costs of over Kcs 400 million.

--the inclusion of the most important investment projects in the national economic plan at a higher level of priority.

--partial improvements in the provision of measurement technology for protecting air and water quality.

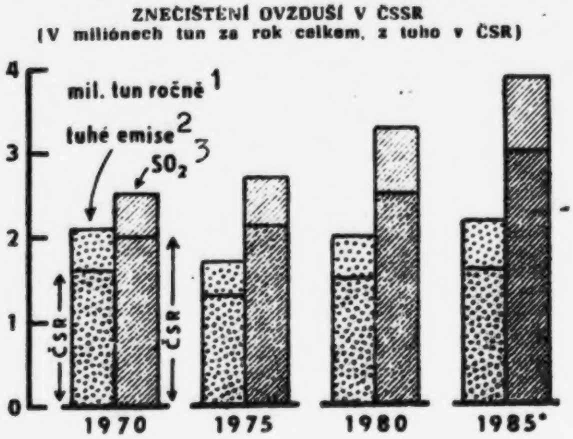
--the formulation of a construction program for small waste-water treatment facilities, to be built primarily under Project Z, to help solve local water pollution problems.

--the assurance of priority deliveries of technology for the general repair of solid-waste separation equipment for the worst sources of air pollution in the sector of the Federal Ministry of Fuel and Energy' for instance, in the North Bohemian Brown Coal Basin there are 14 power plant units for which an outlay of Kcs 200 million will produce a reduction in solid emissions of 82,000 tons per year.

--the development of fluid boilers is being assured, to be operationally tested at the Trmice heating plant.

--the beginning this year of several important projects, such as for instance the desulfurization of gases at the A. Zapotocky Fuel Combine in Uzin at a cost of Kcs 167 million, the waste-water treatment facility at the Mohelnice Moravian Electrical Appliances Plants for Kcs 40 million, and the treatment facility at Spindleruv Mlyn with budgeted costs of Kcs 60 million.

Graph 3: CSSR Air Pollution (Millions of tons per year for entire country, indicating amount generated by CSR)



Key: 1. Millions of tons per year
2. solid emissions
3. sulphur dioxide emissions

Note: The level of sulphur dioxide emissions is determined by increases in the extraction and burning of brown coal and its increasing sulphur content. The chemical industry accounted for a greater share of the increased gaseous emissions because the industry failed to solve the problem of eliminating these emissions.

Regarding the protection of water quality, the beginning of construction is projected on waste-water treatment plants in Cesky Krumlov, and possibly the rebuilding and upgrading of almost 50 other treatment plants, for total budgeted costs of Kcs 1.7 billion.

Preference will continue to be given in the area of environmental protection to investments related to air quality. Preparations are progressing for the beginning of the first stage of construction of experimental desulfurization equipment on one unit of the 200 MW Tusimice II power plant with budgeted costs of Kcs 630 million. In the Ostrava-Karvin Basin, in addition to beginning construction for the dedusting of sintering belt coolers at the Vitkovice Klement Gottwald Ironworks, preparations are being made for the investment intensive dedusting of furnaces at the New Metallurgical Works of Klement Gottwald. The elimination of expansion gas odors at the Vresova February Twenty-Fifth Fuel Combine will improve the air quality in the vicinity of Sokolov.

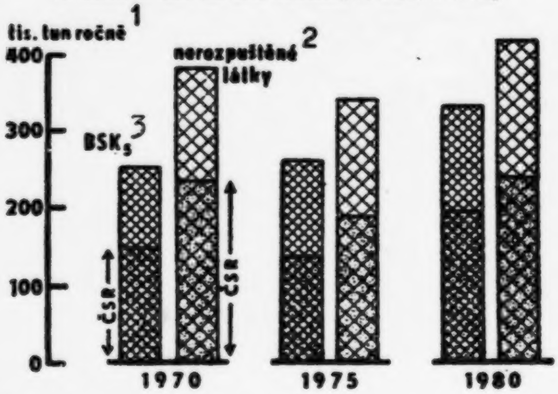
The extensive program of centralizing heat sources will continue. During the Seventh 5-Year Plan, construction should begin on nine heating plants and on tens of kilometers of heat transmission lines with total budgeted costs of more than Kcs 2.3 billion. Increased attention will also be devoted to waste destruction and utilization. Consideration is being given to the construction of industrial waste dumps at a cost of more than Kcs 1.2 billion; half of them would be devoted to electric power plant ash. In Ostrava, consideration is being given to the construction of a city incinerator or a processing plant for the city's solid wastes. Assuring domestic production of pressure filters for waste-water treatment plants would expand the possibilities for using treatment plant sludge.

In Ostramo Ostrava, the construction is planned of a facility for the reconditioning of motor oil, at a budgeted cost of Kcs 260 million.

In the area of compensation measures, construction will also continue of schools in nature. During the current 5-year plan construction will begin on an additional five schools at a budgeted cost of Kcs 237 million.

Graph 4: Water Pollution in the CSSR (In Thousands of Tons Annually for Country as a Whole, and Amount Generated by CSR)

ZNEČIŠTĚNÍ VOD V ČSSR
(V tisících tun za rok celkem, z toho v ČSR)



Poznámka: BSK_5 — biochemická spotřeba kyslíku pětidenní, která postihuje místní znečištění rozložitelnými organickými látkami. V přehledu není zahrnuto plošné znečišťování ze zemědělsky obhospodařovaných ploch.

Prameny grafů: *vlastní výpočty autora.*

Key: 1. thousands of tons per year
2. insoluble materials
3. 5-day biochemical oxygen consumption

Note: BSK_5 - 5-day biochemical oxygen consumption, which describes local pollution in terms of decomposable organic materials. This graph does not include areal pollution resulting from agriculturally overmanaged lands.
Source: calculations by author

9276
CSO: 5000/3021

WEATHER SERVICE, HEALTH MINISTRY DIFFER ON POLLUTION ISSUE

Tel Aviv MA'ARIV in Hebrew 9 Sep 82 p 21

[Article by Aharon Pri'el: "Nine Incidents of Dangerous Air Pollution Registered in Tel Aviv in 1 Month Alone"]

[Text] In the month of July, the weather service published six forecasts of poor air quality in Ashdod. According to the health department, the incidents were investigated. No measures were required. The power plant in Tel Aviv has a different standard from that in Hadera. According to the experts: "We have to change the standards of Reading D, which is polluting the Tel Aviv air."

The electric company's power plant in Hadera must not deviate--even once a year--from the "production" of .3 particles per million of sulphur dioxide in the air. That concentration constitutes half of the Israeli standard for air quality.

The electric company's Reading D power plant in Tel Aviv is permitted by law to "contribute" by way of smoke exhaust from the plant's stacks double the quantity permitted by the Hadera standard.

Two countries? Not exactly. Two laws, two standards, even though only 50 kilometers and 10 years separate the two standards: from one, stack pollution is permitted, and from the other it is not.

The solution, according to air quality experts in the weather service, is to "change the standards of Reading D and adjust them to those of Hadera." The existing condition permits legal air pollution in the Gush Dan area at a concentration double that allowed in Hadera.

A Dual Security System

The commission that established the operating standards of the power plant in Hadera determined that that plant must not deviate by even half the permissible concentration of sulphur dioxide in the air--sulphur dioxide being the most dangerous pollutant to human health. This according to the administrator of the R&D department in the weather service, Alexander Menes, and the director of the environmental research section of the weather service in the Ministry of Transport, Dr 'Ilan Seter.

In Tel Aviv, the experts explain, "a metropolis in which more than a million people live and work, monitoring stations are operated in which dangerous pollutants have been measured escaping from the stacks of the Reading D plant; these pollutants would have been sufficient to arouse the control and supervision system had the incident occurred at the plant in Hadera, but in Tel Aviv they did not do anything."

The weather service people ask: "Why are there three monitoring systems in Tel Aviv, each operating separately and each with different equipment, sometimes with obsolete equipment; and why must many authorities publish separately their findings on the issue of air quality in various parts of Israel?"

The existing procedures require that the power plant in Hadera operate, just as all the electrical generating plants operate, a special exhaust reduction system from the plant stacks whenever the weather service predicts poor air quality. Additional control measures are taken when the watch stations indicate a high concentration of air pollutants.

"A dual security system at the plant in Hadera assures the activation of control and supervisory measures for any problem. Despite that, in accordance with the Reading D law, no control measures have ever been taken since it started operating," according to Mr Menes and Dr Seter.

The experts admit today that they bowed to "enormous government and public pressures." This happened about 8 years ago when they were asked to set up operating standards for Reading D. The weather service experts asked for the construction of a 270-meter stack. The final compromise was for a 150-meter stack; since the station has been in operation, no attempt has ever been made to change the Reading D law, "despite many dangerous deviations that adversely affect the health of the population and the quality of the environment, in which more than a million people live and work," the weather service people say.

"When the weather service forecasts poor air quality for Gush Dan, the standards do not require the activation of control and supervisory measures to reduce the pollution escaping from the Reading D stacks. It is only necessary to send supervisors from the monitoring stations to check whether in fact higher than permissible levels of pollutants were registered," say Mr Menes and Dr Seter.

In contrast to the situation in Gush Dan, at the Eshkol power plant in Ashdod, the electric company operates a system of controls for air pollutants escaping from the plant's stacks. The weather service forecast also warns of poor air quality. The electric company has invested large sums to store low-sulphur fuel for use when air pollution is forecast as a result of poor air conditions.

In July of this year the weather service published nine forecasts of poor air conditions in Tel Aviv and six forecasts of poor air conditions in Ashdod in the vicinity of the Eshkol plant. The forecasts of poor air conditions in Tel Aviv for the month of July were for 7, 11, 12, 16, 18, 19, 20, 22 and 26 July.

In response to the claims of the weather service people, it was reported by the Ministry of Health that three monitoring networks operate in Tel Aviv: one is operated directly by the Ministry of Health, one is operated by the electric company under the supervision of the Ministry of Health and one third, by the municipality of Tel Aviv.

Half the Equipment Is Obsolete

As for the equipment, it became clear from the explanations of the Ministry of Health that half of it is operated directly by the ministry. This part of the equipment is relatively new. The other half is older. The equipment is in good enough shape to allow for individual units that are temporarily out of service to be replaced by spare equipment.

The experts from the Ministry of Health and the weather service are divided in their views of the quantity of sulphur dioxide concentration in the Tel Aviv area. The Ministry of Health people claim that the concentrations measured in Tel Aviv and the periods of time in which the concentrations that pollute the air were found "were and are lower than that permitted under the Israeli standard." The weather service claims just the opposite.

The Ministry of Health people explain the negative effects of sulphur dioxide on human health: "First and foremost is its effect on the respiratory system."

The ministry experts contradict the claim of the weather service people on the question of differences in standards. "There is no difference in the air quality standards by which the various power plants operate. There is only one Israeli standard in both cases, but there are different control and operating procedures for the plants. The plant in Tel Aviv is operated on the basis of a special control procedure that was prepared with the operation of the first production unit at the Reading D plant," they claim at the Ministry of Health.

The power plant in Hadera is operated according to different procedures prepared by a professional echelon that the local council established at the time for planning and construction. That according to the Ministry of Health people. "Both procedures have the force of law even though they were approved by different government authorities." There was no need, in the opinion of the Ministry of Health people, to activate special control procedures in Tel Aviv since, according to the findings available to them, the concentration of sulphur dioxide in Tel Aviv was below the Israeli standard, a finding that contradicts the claims of the weather service experts.

And what about the launching of controls on those dates for which the weather service warned of poor air conditions in Gush Dan? At the Ministry of Health they reply: "In all the cases in which the weather service published a forecast warning of serious conditions expected for air quality, Ministry of Health controllers checked the quantity of pollutants at the monitoring stations, and there was no need to take the advanced measures of the existing procedures for operation of the power plant."

Nevertheless, we did not get from the Ministry of Health exact dates on which controllers were sent out, as required by the procedures, to check the monitoring instruments upon receipt of a warning from the weather service.

9794
CSO: 5000/4501

IMPROVEMENT REPORTED IN LAKE TIBERIAS WATER QUALITY

Tel Aviv HA'ARETZ in Hebrew 7 Sep 82 p 7

[Text] In a meeting that took place yesterday in the office of the minister of health in Jerusalem, the water director, Mr Tzemah Yishai, reported to the minister of health, Mr Eliezer Shostak, that the Lake Tiberias water situation is greatly improved.

The purpose of the 'Inan water reservoir, which holds 9 million liters of water, is to prevent the entry of polluted water into Lake Tiberias; it will become operative in another 3 months. Investment in this reservoir will reach 100 million shekels.

Effect of the Reservoir

With the opening of the 'Inan reservoir, the entry of polluted water into Lake Tiberias will be prevented; i.e., water with a fishy smell that flows in the western channel of the Jordan and refuse from the settlements in the Tiberias winery crescent that now flows into the western channel of the Jordan. The construction of the entire reservoir was accomplished by the water commission.

Mr Tzemah Yishai also reported to Mr Shostak on the complete drainage of 1,200 dunams of fish ponds and their conversion to regular sown areas; 1,500 dunams of fish ponds will be deepened and will be operated in such a way as to require the removal of the water only twice a year.

Jordan Water Quantity

Mr Yishai noted that this activity will significantly increase the quantity of Jordan River water that bypasses the polluting fish pond waters. He further reported that the water system today collects all of the purified water from the sewage of the city of Safed and directs it into agriculture. The water commissioner notes that the quality of the water that leaves the purification facility in Safed is high, about 98 percent pure.

The Qiryat Shemona Reservoir

Mr Yishai reported that work has begun on the Qiryat Shemona reservoir, the purpose of which is to store Qiryat Shemona refuse and, after it is biodegraded, to divert it to agricultural use in the surrounding farms. The minister of health gave these activities his blessing, since they have greatly improved the condition of Lake Tiberias, and promised the water commissioner that together with the minister of agriculture and the minister of the interior, he would act to earmark additional budget funds that were promised in the past by the ministerial committee when the question was raised in public of the future of the lake and the quality of drinking water.

9794
CSO: 5000/4501

DROUGHT REPORTED PUSHING SAHARA TO SOUTH

Johannesburg THE CITIZEN in English 19 Oct 82 p 8

[Text] **DOULA (Cameroun).** — People, animals and crops in Chad and northern Cameroun are suffering from a drought which could presage a quickening in the southward creep of the vast Sahara desert.

Doctors travelling with UN relief teams delivering emergency food aid to remote areas of Chad last month found a significant amount of malnutrition, diplomatic sources said.

Wild animals in northern Cameroun's Waza game reserve, a star tourist attraction, are dying of thirst as two consecutive light rainy seasons have left many watering holes dry.

Floods that usually fill them did not come for the first time in two centuries, the government daily Cameroun Tribune reported recently.

Cotton

Authorities in the cotton-growing south of Chad have scaled down their estimates for this year's cotton harvest. Output is now estimated at between 80 000 and 85 000 tons, down from earlier expectations of 145 000 to 150 000 tons.

Cameroun is likely to produce only 60 000 tons instead of last year's 80 000 tons.

While the dislocations of civil war in Chad have been blamed for part of the food problem, the major cause of shortages is drought.

CSO: 5000/22

BRIEFS

ZULULAND DROUGHT--According to KwaZulu Government officials at least two people are dying of malnutrition each month and the situation is becoming increasingly serious because of the prolonged drought in the area. Officials say the three-year-long drought has caused massive crop failure in the area with children starving. The medical superintendent of a hospital in the area, Dr Steven Knight, said yesterday the hospital was treating numerous cases of malnutrition. Unless rain fell shortly and local tribesmen could plant to feed themselves, the situation would deteriorate even further. The Red Cross has sent 1,000 bags of mealiemeal to the area for distribution among the most needy families. The organisation also sent 500 bags of mealiemeal to Mhlabalatini, where the situation is also critical. "Operation Hunger Organisation" is also distributing a daily cup of soup to 50,000 children. [Text] [Johannesburg THE CITIZEN in English 20 Oct 82 p 10]

DANGEROUS GASES--While it was accepted that radiation produced by nuclear power was dangerous, it was rarely taken into account that large amounts of dangerous gases were released by power stations generating energy from coal, the South African Association for the Advancement of Science heard this week. The Director of the Department of Isotopes and Radiation at the Nuclear Development Corporation (NUCOR), Dr D van As, was speaking at a meeting of the Association's Northern Transvaal Branch in Pretoria on Monday night. He said a power station generating 1,000 megawatts of energy would produce, among other gases, 7-million tons of carbon dioxide and 24,000 tons of sulphur dioxide in a year. To generate the same quantity of energy, 30 tons of uranium would be used by a nuclear power station. It would produce five cubic metres of the highest radioactive material and 2,000 drums of the lowest radioactive material which could be kept under control in a glass drum. Regarding the disposal of radioactive material, Dr Van As said one idea being considered was to store the waste material in glass containers enclosed by steel. These containers would be buried deep underground, and it would take 1,000 years for the radioactive material to penetrate streams or the ground surface. Dr Van As said the maximum dosage of radiation allowed at the border of the Koeberg nuclear plant was 0.025 rem. SAPA [Text] [Johannesburg THE CITIZEN in English 20 Oct 82 p 12]

DROUGHT AID--In future, drought relief would be handled as conservation measures and not as rehabilitation measures reported, the Deputy Minister of Agriculture, Mr Gert Kotze, said yesterday. The new measures introduced to reduce the affects of drought would be aimed at maintaining agricultural resources and in particular pastures. Opening an Angora research farm at Jansenville, he said State assistance would be provided in the case of seriously affected drought areas. However, farmers making any claims would have to contribute in some other way. Farmers should be prepared, under normal circumstances, to keep within the prescribed stock numbers. Assistance would not be given to farmers whose stock numbers had decreased by a third. Mr Kotze said in order to ensure better communications between the Government and organised agriculture, local as well as national drought relief committees would be formed. There would be direct consultation between the two committees to avoid any unnecessary delays in providing drought relief aid. Sapa. [Text] [Johannesburg THE CITIZEN in English 21 Oct 82 p 10]

CSO: 5000/22

NEW LAW TO CONTROL AIR POLLUTION COMES INTO FORCE

Helsinki UUSI SUOMI in Finnish 3 Oct 82 p 6

[Article: "Implementation and Guidelines Not Yet Organized"]

[Text] An air protection law went into effect in the beginning of October, but the implementation of the law and other arrangements are not yet complete.

For example, the City of Helsinki has not yet determined which organ will act as an official air protection office. Espoo and Vantaa have appointed their boards of health as administrators of practical matters.

Cooperation Secretary Kari Wallenius of the Cooperative Council of the Capital City Area (YTV) states that YTV does not have a single individual in this area also.

"We have requested from the communities the authority for YTV to function as an area-wide general overseer, but the municipalities have not yet made a decision on this proposal."

YTV would procure experts in various areas, who are not yet even available to the provincial governments, for air protection jobs. The first experts will possibly be acquired next year.

There are also yet no guidelines from the Interior Ministry or the provincial governments for the implementation of this new law; the provincial governments will function as the highest authority and will grant permits for so-called air pollutors.

100--200 Air Pollutors in Helsinki Area

Secretary Wallenius of the YTV's Environmental Protection Board states that, for example, there is no precise information on how many facilities would require permits in the Helsinki area. The estimates fluctuate between 100 and 200.

An air pollutor must present a report on its anti-pollution measures to the provincial government, which can grant a permit for its operations from the point of view of preventing air pollution.

Older plants and facilities will have a year and a half grace period. Since the processing of permits can take a long time, it will perhaps be years before the air protection law can be fully implemented.

10576
CSO: 5000/2506

STUDY OF GULF OF FINLAND SEALS TO AID IN POLLUTION ANALYSIS

Helsinki HELSINGIN SANOMAT in Finnish 26 Aug 82 p 11

[Article: "Seal Study Discloses Pollutants in Gulf of Finland"]

[Text] The nearly 10-year study on mercury- and heavy metal concentrations in seals in the Gulf of Finland is in the chemical analysis phase. The first reports of the joint project of the Oceanic Research Institute and the Game and Fisheries Research Institute will be published in the fall.

The layer of fat under the skin, muscles, liver, and kidneys in approximately 30 seals will be analyzed in the study. The purpose is to measure the amount of heavy metals, mercury, cadmium, and zinc found in these animals as well as to determine the contents of chlorinated hydrocarbons and the notorious DDT and PCB chemicals.

"The seal is an important subject of research. It represents a rather accurate reflection of the changes taking place in the environment. Pollutants are immediately seen in the organs of seals," states assistant Olavi Stenman of the Game and Fisheries Research Institute.

A similar but more extensive seal study was conducted earlier at Oulu University. Poisons in the Baltic Sea are clearly visible in the Perameri seals.

"We have had difficulties in obtaining a sufficient number of seals for the study. Of the two types of seals the gray seal is protected and the hunting season for the marble seal is limited to a couple weeks in the early spring. All dead seals from nets as well as on the shore have been used for the study," states Stenman.

All in all, the researchers have obtained samples from approximately 30 seals while the number of seals analyzed in the Oulu study was much greater.

The biological goal of the study is to determine pathological changes caused by chlorinated hydrocarbons in the seals. "Toxic substances have disturbed the ability of seals to reproduce, among other things," states Stenman.

10576
CSO: 5000/2506

GOVERNMENT EXPECTED TO TOUGHEN LAWS ON SHIPS' OIL DISCHARGES

Stockholm DAGENS NYHETER in Swedish 22 Sep 82 p 10

[Text] Even though oil receiving stations are available at 15 locations along the coast of Sweden near harbors, many ship's captains still cannot resist the temptation to dump their oil at sea.

Last year 261 cases of oil discharges at sea were registered by the coast guard, but now tougher laws are in the works that would require more than just light fines.

If parliament approves the plan, a water pollution fee will take effect on 1 January 1984. The amount of the fee will depend on the size of the ship and the amount of oil discharged.

The lowest fine, according to the schedule, is 5,000 kronor for 1,000 liters from a 3,000-ton ship. A 50,000-ton ship that releases 501,000 liters would pay 498,750 kronor.

The new fines are one of Sweden's contributions to this year's World Navigation Day which will be celebrated throughout the world one day this week. The Communications Ministry and the Shipping and Navigation Administration have chosen Thursday.

On Thursday an information meeting will be held on global cooperation under the leadership of IMO, the United Nations organ for technical navigational questions. The theme will be the prevention and monitoring of pollution from ships.

It is estimated that a new international convention on ocean pollution, Marpol, will take effect in 1984 after over 10 years of preparations. One important feature of this convention is the establishment of special regulations for particularly sensitive regions such as the Black Sea, the Mediterranean Sea, and the Baltic Sea.

The release of oil will be completely prohibited in these regions. With regard to the Baltic Sea nations, Marpol will be supplemented by the Helsinki Convention, which has been implemented since 1977, although it took effect formally in 1980. It has been approved by all the Baltic Sea nations.

Within the framework of this regional cooperation, Sweden has presented many proposals and views, according to Lennart Alarik at the legal section of the Communications Ministry.

"We would like to see the other Baltic Sea nations eliminate fees for ships that empty their ballast water and tank washings at the oil receiving stations."

So far, Sweden is the only country that has done so. This, of course, is designed to make it more attractive for ships to take the extra trouble. Plans are to remove the fee for emptying machine-room oil as soon as possible. At present, this can be done at 50 locations along the coasts of the Baltic Sea nations.

Last year parliament approved a program to make sea transports less harmful to the environment by gradually introducing new measures according to a list of priorities. Some important areas are dredging, blasting of shoals, and improved traffic control.

One interesting project is designed to make coastal tankers less harmful to the environment. The idea is to introduce a passage fee which would be used to reward ships that fulfil certain minimum environmental requirements. The system will take effect in 1984. Next year stricter regulations will be introduced for piloting ships with hazardous cargo in Swedish waters.

The new water pollution fee for emissions from tankers will be collected by the coast guard. The question is how effective this control will be. The coast guard has three planes for air reconnaissance, but this is far from adequate. Only a few of the offenders are caught.

"A microwave radiometer that can detect the thickness of oil spills will be added to our equipment," said Sven Uhler, chief of the Frontier Guard. This is important for determining how much oil has been discharged. We also need to increase the time we spend in the air from 2.5 or 3 hours at present to over 5 hours."

"Our largest plane is a Cessna that takes up to 10 passangers. We need a turboprop plane with room for 12 people and the new equipment."

The coast guard needs an appropriation of 10 million kronor to show that Sweden is serious about enforcing the new water pollution regulations.

9336
CSO: 5000/2504

SWEDEN

STUDY SHOWS DROP IN AMOUNT OF HAZARDOUS WASTE SINCE 1978

Stockholm DAGENS NYHETER in Swedish 21 Sep 82 p 20

[Text] The amount of hazardous waste in Sweden is decreasing. A 1978 survey found 500,000 tons, but now the figure has dropped to 466,000 tons.

Still, however, no one knows what to do with 3,000 tons of the waste--in addition to nuclear waste from our Swedish nuclear power plants.

This was revealed by a nationwide survey presented at an international conference on waste, Elmia Waste 82. The conference began on Monday in Jonkoping. The survey, which was commissioned by the Environmental Protection Board, was based on 30,000 questionnaires to companies involved in industry, commerce, agriculture, forestry, healthcare, and other fields.

Five percent of the companies in this country produce 50 percent of the hazardous waste and 10 percent are responsible for 75 percent of the waste. Thus, the problem is concentrated to a few companies.

Hazardous toxic waste, i.e. waste that is directly harmful to nature and man and whose damage cannot be repaired, is responsible for less than 5 percent of the total quantity, according to the survey.

Most of the hazardous waste is produced by the engineering industry, which is responsible for 28 percent. It is followed by agriculture and forestry with 25 percent, closely followed by the iron and steel industry with 20 percent. The chemical industry is responsible for 17 percent.

The most common form of waste that is harmful to the environment is polluted water, which is responsible for just under half of all the waste. It is followed by oil which is responsible for 20 percent. PCB, cyanides, cadmium, acids, and heavy metals are responsible for about 7 percent.

9336
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Worldwide Report

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No. 377

CHINA ADDRESSES ENVIRONMENTAL ISSUES -- III

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WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

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INCORPORATION OF ENVIRONMENTAL RIGHTS IN LAWS URGED

Beijing ZHONGGUO SHEHUI KEXUE [SOCIAL SCIENCES IN CHINA] in Chinese No 3, 1982
pp 29-39

[Article by Cai Shouqiu* [5591 1343 4428]: "Preliminary Investigation Into Environmental Rights"]

[Text] In the wake of the modern development of production and the daily more serious environmental pollution, the human ecosystem has received a serious threat; the people of all countries are demanding, ever more insistently, the formulation and perfection of environmental laws in order to protect the environment and prevent further pollution; consequently, the study of environmental rights has been brought to the fore. The concept of environmental rights includes both the right of the nation and its legal entities and citizens to use and enjoy natural environmental conditions, and their duty to keep the natural environment from becoming polluted further. This article, through a comparison of the relevant regulations contained in the laws of various countries, makes a preliminary investigation into the general concept and specific meanings of environmental rights as well as the question of laws relating to them. The author considers that although China's constitution also contains some material on environmental protection, nevertheless we should do more in our laws to emphasize and broaden the concept of environmental rights. This is an important guarantee for doing a good job in our country's work of environmental protection.

Due to the increase of environmental pollution, a whole series of new social problems have been created; hence, the modern social sciences have been presented with many new topics for study, of which the question of environmental rights is one. Based on the actual current situation of China's environmental protection work and the demands of the broad masses, and in the course of stepping up the establishment of a legal system determining the areas to be covered by environmental protection, solving the question of environmental rights in both its theoretical and practical aspects has already become a problem worthy of attention. This article investigates the problem in several aspects, as ou lined below, in the hope of arousing comrades to study the problem more intently

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*The author, Cai Shouqiu, was born in 1944, graduated from the chemistry department of Wuhan University in 1968, and is now a research staff member of the Chinese Environmental Science Institute and Wuhan University's Environmental Law Research Institute.

The Proposition of Environmental Rights

Environmental rights is a new cause that has been brought before us by the development of the life and production of society; it is the product of the continuous worsening of the human environment as well as the continuous strengthening of the work of protecting the human environment. The question of the environment in human society has undergone a process of development, and in different historical periods the question of the environment has had a different nature and different characteristics, and this fact is reflected in the different ways in which it has been manifested in law. During the very long period prior to the Industrial Revolution, due to the low level of human productive forces, from the point of view of the situation as a whole the influence of human activity on the environment did not constitute a serious attack on the ability of the environment to purify itself. During this period, the question of the environment was manifested principally in problems relating to the utilization of natural resources, or in areas that had considerable influence on people's lives; in law some scattered articles appeared which had the effect of protecting a part of the environment. During the period between the Industrial Revolution and World War II, in the wake of the appearance of capitalist heavy industry, the level of productive force was continuously raised, and the influence of human activity upon the environment became greater and greater. The question of the environment during this period consisted mainly of concern over point-source pollution and area pollution by the three industrial wastes, which was reflected in law by the appearance of some single-article environmental protection laws and regulations or environmental protection laws of a purely local nature. During these two stages, neither articles of law nor single-article laws and regulations clearly proposed the general concept of environmental rights, and in the fundamental laws and constitutions of the various countries, there was still less any clear formulation of environmental rights. After World War II, and in particular during the sixties and seventies, industrial and agricultural production grew by leaps and bounds, bringing about the danger of the pollution of large areas, or even of the entire world, and seriously threatening the human ecological balance, the safety of mankind itself, and the economic development of society, thus creating a great number of disputes on the subject of environmental pollution. According to some estimates and statistics, there is a tendency for the total quantity of pollutants to double every 14 or 15 years. In the Soviet Union, losses due to water pollution each year amount to over 6 billion rubles. In the United States, total losses through death, disease, and material losses caused by air pollution alone amounted to $25 billion; in the United States in 1972, 80 million people, or 40 percent of the population, were harmfully affected by noise pollution, and an additional 40 million face the danger of hearing impairment. In Japan, in 1970 alone the number of cases of litigation involving environmental pollution harmful to the public welfare reached 60,000. For this reason, some people in Western countries call our present age the "Age of Environmental Crisis," and refer to the questions of environmental pollution and the ecological balance as "ecological politics." At this stage, the people's cry for the prevention of pollution and environmental protection is louder than at any other period in history, with the result that it has led to the formation of the newly independent legal department of environmental law, and it is also during this stage that the concept of environmental rights has been proposed.

Faced with the harsh reality of environmental pollution, people gradually awakened to the realization that the natural environment that originally gave benefits to people without ever asking anything in return is now capable of bringing along a good many troubling, disquieting elements as well, and that heaven-given rights that people had considered as coming with life itself, such as the right to breathe clean air, are now capable of being invisibly harmed and expropriated. As the "Human Environment Manifesto"[1] points out: "Human beings on this planet, throughout the long course of their evolution, have had a great many hardships and difficulties; only the rapid progress of science and technology and the use of countless methods and the attainment of forces on a historically unprecedented scale have enabled human beings to reach the stage where they can change their environment. The question of the environment in its original, natural state versus the environment as altered by man is exceedingly important for the right of human beings to enjoy well-being, and for other basic human rights--even the right of existence." For their own welfare, people in great numbers have called on those who discharge pollutants into the environment to respect others' right to life and to prevent the quality of the environment from being harmed by pollution. The pollutors, however, proceeding from the traditional viewpoint, consider that discharging pollutants into the waterways, atmosphere, and open country that are not owned by any individual is not to be considered illegal or as impinging on anyone's rights; that engaging in economic activity, and making a profit therefrom, is their right as determined by law; and that discharging pollutants is a necessary condition for exercising that right. In this way, two contradictory and conflicting views concerning social rights are produced. The victims of pollution want to seek redress through some legal measure, which would have the greatest coercive force. However, traditional constitutions and laws, though they have formulated a great number of fundamental rights, have nevertheless still not formulated people's environmental rights, and this places the law in a weak, powerless position with respect to the pollutors, and also in a condition of being unable to help the victims of pollution. For example, in 1960 a doctor in West Germany brought a case before Europe's Human Rights Commission to the effect that "discharging atomic wastes into the North Sea is a violation of human rights." However, the commission, on the grounds that the European Human Rights Treaty did not have any stipulation that guaranteed the cleanliness and healthiness of this environment, threw out his case. Since then, at the European Environmental Protection Conference, the European Environmental Cabinet Minister's Conference, and other European conferences, a motion to add environmental rights to the presently existing list of human rights in the European Human Rights Treaty, has been proposed many times, but it has never passed. This circumstance has aroused the indignation and censure of a great many people. For example, the American scholar [Rachel] Carson, who some people abroad consider to have launched the modern ecological era, laments in her 1962 book "The Silent Spring": "The present is also the age of industrial rule; in industry, it is difficult for the right to make money at any cost to be condemned"; "If one says that the Bill of Rights makes no mention of the right of citizens to a guarantee that they will escape the danger of being strewn with poisonous chemicals by private individuals or public organizations, that is really only because our predecessors, due to limitations in their wisdom and foresight, had no way of imagining such problems." The "White Paper on Human Rights" published by the Federation of Japanese Lawyers in 1967 cried out loudly and urgently that "Public harm violates human rights." Afterward, people in great numbers strongly demanded a clarification, through law, of the rights to be enjoyed by the state, the collective, and the individual in utilizing natural environmental conditions, as well as the duties they must fulfill to protect that environment. In this way, environmental rights mounted the social stage known as the "age of environmental crisis." By the end of the sixties, under the powerful impetus provided by public opinion, environmental rights all at once became the central topic of study and discussion by environmental protection departments and legal departments; theoretical study and legislative work relating to environmental rights was also greatly developed, manifesting itself primarily in two areas:

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[1] This article's sections on the "Human Environment Manifesto" were translated from the "Six Laws on the Environment" published in Japan in 1979.

First, in the international area, some international conferences on environmental protection one after the other passed manifestoes of principle on the subject of environmental rights, and some academic conferences investigated deeply and broadly theories on environmental rights and exchanged their results. For example at the International Conference on Public Harm convened in Tokyo in March 1970, the fifth item (relating to environmental rights) in the "Tokyo Resolutions" passed by the conference raised the following request: "Of particular importance is our request that the environmental rights, to be enjoyed by all people, of not being harmed by factors injurious to health or well-being, and the right of the present generation to leave to their descendants an inheritance consisting of natural resources filled with natural beauty, be made basic principles of legal rights and defined as part of the legal system. In the principles of the "Human Environment Manifesto" passed by the UN Human Environmental Conference convened in June 1972, it is clearly proclaimed: "Since people, in an environment that supports the maintenance of dignity and well-being, enjoy freedom, equality, and rich conditions for life, they have also assumed the serious responsibility of protecting and improving that environment for present and future generations." Hence, the proposition of environmental rights was brought up in such a way that both the rights and duties of environmental protection appeared at the same time. At the International Scientific Conference on the Human Environment convened in Tokyo in November 1975, at the conference on law, the central topic of discussion was "human rights with respect to the environment"; the legal experts coming from the various countries engaged in an academic exchange on the question of environmental rights, and the magazine RESEARCH ON ENVIRONMENTAL LAW edited by the Japanese legal profession's Association for the Study of Problems Related to the Human Environment published a special edition to present the results.

Second, in some countries where the question of the environment was prominent, theoretical study and legislative work relating to environmental rights achieved a relatively strong development. In Japan, specialized societies for the study of environmental rights, such as the Environmental Rights Society of the Osaka Lawyers' Association, appeared. Due to the fact that the concept of environmental rights had already been proposed in law and had aroused the attention of Japanese from all walks of life, the preface to the "Tokyo City Public Harm Prevention Regulations" formulated in 1969 emphasized that: "All residents of the city have the right to a healthy, safe and comfortable life, and these rights cannot, because of public harm, be indiscriminately encroached upon." Following this, the "Tokyo City Government Public Harm Prevention Regulations" formulated in 1971 and the "Kawasaki City Public Harm Prevention Regulations" formulated in 1972 in turn adopted the same stand on environmental rights. In the United States, discussions on the general concept of environmental rights, its constitutional basis, and other theoretical legal questions relating thereto sprang up in 1969. The establishment of the U.S. Environmental Law Institute, and the theory of public trust proposed by University of Michigan Professor Sachs [Sa-ke-si], provided impetus to the study of environmental rights in the United States. In legislation, the first article of the U.S. "National Environmental Policy Law" (passed in 1969 and later revised) made a detailed formulation of the rights and duties of the state and its citizens with regard to the protection of the environment, and the third clause of this article emphasizes that: "The Congress considers that everyone should enjoy a healthy environment and that, at the same time, everyone also has the responsibility to make a contribution to preserving and improving that environment." The appearance of the concept of environmental rights in certain laws and regulations dealing with environmental protection gradually influenced the nation's fundamental, great law--the constitution. In Switzerland, in June 1971, the content of the seventh item in the newly established Article 24 of the Swiss constitution said: "The Federation should adopt legislative measures to protect people and their natural environment from harmful or unpleasant encroachments, and the Federation especially should struggle against air pollution and noise pollution." Because of this statement, and the stipulations in the constitution regarding the protection of forests, wild creatures, and beneficial birds made public as early as 1974, Switzerland is considered to be the first nation to have incorporated environmental rights or matters closely connected with environmental rights into its constitution. By now, the issues constituting the basic content of environmental rights have been clearly recognized in the constitutions of a good many countries.

Through this process from which the concept of environmental rights came to be proposed, three conclusions can be drawn:

First, from the standpoint of the historical development of society, the proposition of environmental rights is the natural product of the development of the question of the human environment, and there is a definite tendency in the development of the constitutions, environmental laws and other related laws of the various countries to include environmental rights among the basic rights of nations and citizens, as a good example of social phenomena being produced by physical causes. The whole scope of environmental rights, therefore, has its roots deeply in the material life of human society. Although the development of the concept of environmental rights and the ways this development has been manifested in various countries have been exceedingly complex, nevertheless it has presented a course of development that is legally unified and is being strengthened daily. Therefore, the science of law under a socialist system should study the question of environmental rights in the same way. Of course, this study should be guided by Marxism-Leninism and undergo a scientific analysis of the conditions under which the proposition of environmental rights was produced, as well as an accurate estimate of their usefulness, so that this foreign concept can be properly implemented in China and used to promote

China's environmental protection work; it should not simply copy the specific stipulations of foreign countries regarding environmental rights.

Second, environmental rights is a core issue of environmental law, and the basis of environmental litigation. Environmental law embraces the entire scope of all laws which serve to adjust the various social connections arising out of the need for protection of the environment. The greater part of environmental rights as they relate to environmental law manifests itself in the two aspects of rights and responsibilities. Environmental law, then, based on these two aspects, expresses and defines the relevant social connections and, by means of the coercive power of the state, guarantees the legal forms necessary to implement them. The clearer and more concrete the laws of a country with regard to stipulations on environmental rights, the more complete the conditions for the further development of its system of environmental law and the more secure the basis for that system will be. Environmental litigation is based on the relevant environmental protection laws, for the purpose of preserving the advantage of people enjoying a good environment, and is an important avenue for solving environmental disputes. Since the development of the concept of environmental litigation has already been promoted, if the concept of environmental rights has not been clearly defined in law, it would be very difficult to develop environmental litigation. Therefore, immersing ourselves in launching programs of study on theoretical questions relating to environmental rights is very important for setting up a sound system of environmental law for our country, developing our country's environmental litigation, and solving environmental disputes.

Third, theory regarding environmental rights is in a developmental stage, and China's legal workers should make a contribution to a scientific theory of environmental rights. At present, there are many theories and views regarding environmental rights, and many issues are still being debated. For example, at the conference in support of human rights held by the Japanese Lawyer's Association in Niigata, Japan, in September 1970, the theory of absolute environmental rights was proposed, the core of which was the concept of the "agreement of all inhabitants," i.e., any change in the environment must obtain the agreement of all inhabitants. This theory considers that environmental rights take absolute precedence over other factors, and that environmental rights should take the form of concrete right to be heard in litigation. Another influential theory of environmental rights is called the guiding principle theory of environmental rights, or the explanatory theory of environmental rights. This theory considers that environmental rights are a stipulation based upon guiding principles and are not necessarily connected with any direct, concrete right to be heard; it is rather that, in order that environmental rights may be realized for everyone, the constitution must be revised or great changes must be instituted in the legal procedures currently in force. From the standpoint of the course of development of environmental rights, these diverging and contending aspects are entirely natural; the establishment of many other fundamental rights has passed through such a stage. Serious, conscientious social science workers absolutely should not avoid this kind of divergence, but should actively proceed with analysis and study of these aspects.

The Content of Environmental Rights

The environmental rights discussed in this article are rights according to law, i.e., the various rights and interests bestowed by the law and connected to the law upon the principal parties to be enjoyed by them with regard to the natural environment they live in. Due to the fact that environmental pollution is largely the product of the development of modern industry, traditional laws in the past either made no stipulation at all or were not clear about the concept of environmental rights; hence, legal workers both in China and abroad have not come up with a unanimous viewpoint regarding the definition and content of environmental rights, and the stipulations regarding environmental rights in the legal literature of the various countries are also not completely alike. Under these circumstances, there are two ways of proceeding with a study of environmental rights: the first is to proceed from the basis of a predefined, general concept, and compare a scholar's definition against the complex legal provisions in effect in real life; the points that coincide could be recognized as representing environmental rights, and those that differ would not be accepted; another would be to proceed from the basis of the legal provisions regarding environmental rights in the laws currently in force, synthesize them, and generalize from them the primary content of environmental rights, clarifying the general concept, nature, and meaning of environmental rights. In view of the fact that at present a good many countries already have some stipulations on environmental rights in the various environmental laws and regulations they have promulgated, and that many countries also have specialized stipulations on environmental rights in their constitutions, I believe that if we want to clarify the general concept and meaning of environmental rights, the best method is to compare the provisions on environmental rights in the laws of the various countries. Because a constitution is a country's great, fundamental law, a comparative analysis of the stipulations on environmental rights in the constitutions of the various countries is even more important for our understanding of this question.

1. Environmental rights include three aspects--the environmental rights of nations, of legal entities, and of citizens, which together make up the unified whole of environmental rights.

In analyzing the stipulations regarding environmental rights in the constitutions of the various countries, there are generally three types, according to who is enjoying the right:

The first are the nation's environmental rights. A country's natural environment is the area and material conditions which that country relies upon for existence, including that country's sea lanes, airspace and territory. Therefore, a country's environmental rights are universally given preeminence in the laws of the various countries. From the standpoint of international law, countries are the subjects of international law, and a country's environmental rights consist of its right to engage in all actions in the exercise of the protection of its environment, and are a component part of a nation's right of sovereignty.

From the point of view of the internal laws of the various countries, a country's environmental rights consist mainly of the state's fundamental responsibility to protect the natural environment needed for the life of the people. For example, it is stipulated in article 110 of the Constitution of the Republic of Panama promulgated on 11 October 1972: "Based on the situation of the national economy and social development, actively protecting the ecological environment--and preventing environmental pollution and the disruption of the ecological balance--is a fundamental responsibility of the state." Article 24 of the Constitution of the Republic of Greece promulgated on 7 June 1975 stipulates: "Protecting the natural and cultural environments is a responsibility of the state, and the state should lay down particular preventive or coercive measures." Regarding these responsibilities, the constitutions of some countries make stipulations in comparative detail, while those of other countries do so according to more general principles. In comparing the relevant stipulations in the constitutions of the various countries, four principal aspects of a country's environmental rights appear: 1) the state's right of ownership over all publicly owned land, waterways, mines, and other natural resources is clearly stipulated, as in article 14 of the Philippines Constitution, as well as in the relevant provisions of the constitutions of Bulgaria, Poland, the German Democratic Republic, and the Soviet Union; 2) the scope of the natural environment to be protected by the state is clearly stipulated, as in articles 75, 77, and 93 of the Constitution of the Kingdom of Thailand, as well as the relevant provisions in the constitutions of Papua-New Guinea and Bulgaria; 3) it is clear that the state has the right to formulate all kinds of laws and regulations for the prevention and control of environmental pollution, as stipulated in article 151 of the Constitution of the Republic of Algeria, and the relevant provisions in the constitutions of Switzerland, Sweden, Chile, and Czechoslovakia; 4) the state's right to guarantee that its citizens obtain a healthy living environment is clearly stipulated, as in clause 18 of article 1 of the Constitution of the Republic of Chile and in the relevant provisions of the constitutions of Yugoslavia, Cuba, Thailand and Hungary. It is absolutely not by chance that the stipulations regarding the environmental rights of nations of a number of countries having different social systems, such as Greece, Chile, Bulgaria, and Yugoslavia, all appear in the name of the responsibility of the nation; it is because the natural environment is a fundamental condition for the existence of human society, while environmental pollution is an objective phenomenon that has followed in the wake of human economic activity; therefore, the protection of the natural environment possesses a universal and long-term nature. The establishment of the environmental rights of nations is actually the outcome of the enrichment and development of the theory of the function of the state and theories regarding the state and laws.

Second are environmental rights enjoyed by legal entities (i.e., government organs, organizations, and factories, mines and similar enterprises and units). For example, article 31 of the Constitution of the Republic of Bulgaria promulgated on 16 May 1971 stipulates: "Protecting nature and natural wealth, waterways, the atmosphere, the surface of the earth, as well as cultural remains, is the responsibility of state organs and enterprises, cooperative social groups, and social organizations...." Proceeding from the basis of the actual circumstances of environmental protection, it is not enough merely to stipulate the environmental rights of states and citizens. Because of the mobile nature of environmental pollution (the mobility of water and the atmosphere, the transmission of noise), as well as the development of modern means of communication, the small universe of the individual no longer exists; also, due to the fact that in modern social life citizens frequently appear in the form of definite organizations and groups, and environmental pollution is created mainly by factories, mines, enterprises and units that discharge pollutants, environmental protection also generally manifests itself as a common issue of a group of people in the environment of a particular settlement. So the environmental rights of the legal entities which are intermediaries between the state and the citizens have the particular effect of forming a link between the former and the latter. Therefore, many countries place particular importance on the environmental rights of legal entities. For example, Soviet Russia's nature protection law, with regard to the protection of the soil, mineral resources, waterways, forests, and wild animals and plants, minutely and concretely stipulates the rights and duties of the legal entities such as factories and mining enterprises, farms and farming villages. Article 3 of Japan's fundamental legal countermeasures on public harm also lays down clear stipulations regarding the environmental rights of enterprises.

Third are environmental rights enjoyed by citizens. Article 193 of the Constitution of the Socialist Federated Republic of Yugoslavia promulgated on 21 February 1974 stipulates: "People have the right to a healthy living environment." The reason the environmental rights of citizens have been included within the scope of the protection offered by constitutions and, moreover, the reason they are urgently demanded by the broad masses, is because, first of all, in the wake of the development of modern means of production and modern lifestyles, a clean, comfortable natural environment has already become a fundamental condition for people to enjoy effective, and continuous work and a healthy, happy life. The functions of the natural environment are, first, to provide human beings with a place for life, work, and rest; and second, to provide human beings with all the natural resources required to develop their material and spiritual lives. If there is not a clean, agreeable natural environment that is able to guarantee the continuous provision of all the natural resources needed for the people's material and spiritual lives, then humanity will be without the means to continue to exist and develop. If a person's place of work and living is polluted or interfered with by a large quantity of poisonous and harmful substances, noise, and bad odor, then it is possible that the conditions for that person's existence can no longer be protected. Second, citizens' environmental rights are necessary conditions for the realization of their fundamental rights to property, labor, and existence, but they are not the equivalent of these rights. Before the environmental rights of citizens were clearly formulated, people frequently adduced other rights as the legal basis for protecting the well-being of the victims of pollution. For example, in the course of the litigation over Japan's Osaka Airport, presiding Judge Sawa Susumu gave the following account: "In circumstances of this kind, residents whose lives are jeopardized have the right, according to article 13 of the constitution (regarding the right of citizens to life, liberty, and the pursuit of happiness) to demand that the government adopt certain countermeasures." In fact, some countries have stipulated their environmental rights precisely from this point of view, as is stipulated in article 15 of the Constitution of the Socialist Republic of Czechoslovakia: "The state is concerned about beautifying nature and having nature thoroughly protected, and with protecting the beautiful natural scenery of the motherland, in order to create an increasingly richer source for the sake of the happiness of the people's lives, and to create an appropriate environment for the sake of the health and rest of the laboring people." However, from this, one decidedly cannot reach the conclusion that the right to work, the right to rest, and other rights can be substituted for environmental rights. In actuality, each has its own conditions and course of origin and development, and each has its specific scope of application. At present, the environmental rights of citizens already cover a considerably broad area, and moreover are in the process of gradually developing from the prevention and control of environmental pollution to demands for comfort with regard to the environment (including the degree of quiet, cleanliness, pleasantness, and comfort), thus causing environmental rights to develop gradually into the most basic of rights.

From this it can be seen that the environmental rights of nations, legal entities and citizens are interconnected, and each also has its own particular effect and scope of application, among which the environmental rights of nations possess guiding significance, the environmental rights of citizens are the most basic, and the environmental rights of legal entities, though they are derived from the former two, nevertheless possess an important position in environmental protection work that cannot be overlooked. From the standpoint of the provisions of the constitutions of the various countries, some only stipulate the nation's environmental rights; some stipulate two or three kinds of environmental rights; some, in the provisions of various laws, separately stipulate the environmental rights of the nation, of legal entities, and of citizens, and some stipulate all three kinds of environmental rights in the same provision. For example, article 20 of the Constitution of the Socialist People's Republic of Albania stipulates: "Protecting the land, natural resources, waterways, and air from being spoiled or polluted is the duty of the state, economic and social organizations, and all the citizens."

2. Environmental rights include the two aspects of the right to enjoy the environment and the duty to protect the environment, and the two together form the scientific social proposition of environmental rights.

From the point of view of rights versus duties, the constitutions of the various countries generally have four types of stipulations regarding environmental rights: The first is environmental rights expressed by the specific term "rights." The second is environmental rights expressed by the specific term "duty." For example, article 50 of the Constitution of the Islamic Republic of Iran promulgated on 15 November 1979 stipulates: "In the Islamic Republic, it is the duty of the citizens to protect the living environment of the present generation and of our descendants." Third are environmental rights expressed simultaneously by both the specific terms "rights" and "duty." For example, article 66 of the Constitution of the Republic of Portugal, promulgated on 2 April 1976, stipulates: "All citizens have the right to enjoy a living environment in which their health will not be harmed; at the same time, they also have the duty to protect the cleanliness of the environment." Fourth are environmental rights which are not expressed in the form of the specialized terms "right" and "duty."

There is a viewpoint which considers that environmental rights indicates the right of citizens to enjoy a good environment and, moreover, firmly believes that only if the legal standard of the term "right" had been clearly employed in the sections and chapters of a country's constitution dealing with the basic rights of citizens can they accurately be called environmental rights, and that if the legal standard of employing "duty" or some other term is used, they cannot be considered environmental rights. I consider that in studying and advocating environmental rights to proceed from the basis of an understanding of the unity of rights and responsibility would be much more beneficial and effective than to do so from the basis of separating rights and duties. Originally, rights and duties were distinct from one another. A person had the right to decide whether or not to exercise his own rights, but if he did not fulfill his duties would be punished by law. From this standpoint, to speak of rights and duties as the same thing would not be proper. However, while rights and duties are distinct from one another, they are also connected. Marxism considers that: "There is no right without responsibility, and there is no responsibility without right."[2] If rights are stipulated, then the corresponding duties are pointed out by implication, and if duties are stipulated, then one will have bestowed upon others the right to demand that the persons concerned fulfill those duties according to the law. In law, there is no great distinction between stipulating, after all, rights, duties, or a combination of the two, and what basis to proceed from is generally a matter of convenience. Due to the intrinsic characteristics of environmental pollution and environmental protection work, it is especially worthwhile for us to immerse ourselves in the study and discussion of how to formulate environmental rights. From the point of view of the actual situation of the stipulations regarding environmental rights in the laws of the various countries, the laws have definitely not followed the restrictions designated by any one jurist, but have realistically reflected the new circumstances of actual life in all their multiplicity. From the point of view of the position of environmental rights within the constitutions, some countries put them in the general principles section or the preface, others place them in the chapters and sections dealing with the basic rights and duties of citizens, and still others place them in the chapters and sections dealing with the country's social and economic system. From the point of view of the relationship between rights and duties, some countries employ the two terms disctinctly, while others do not distinguish between them. From the point of view of the direction of development, there is a tendency for the stipulation of environmental rights in the form of a unity of rights and duties to be accepted by more and more countries, laws and legal workers and, moreover, to be reflected in the three aspects of environmental rights for nations, legal entities and citizens.

In the area of international environmental law, principle 21 of the "Human Environment Manifesto" stipulates: "According to the UN Charter and the principles of international law, each country possesses the right to develop its natural resources in accordance with its environmental policies. At the same time, it also has the responsibility to insure that its activities within other jurisdictions and areas of control do not harm any other country's environment or the environment of any area outside the country's jurisdiction." This clearly states that a country's environmental rights include the two aspects of rights and responsibilities. The sections on the environmental rights of the nation in the constitutions of some countries also stipulate them in their two aspects of rights and duties. For example, since articles 24 and 25 of the Constitution of the Federation of Switzerland stipulate the rights of the Federation with regard to the natural environment (for example, the right to utilize, supervise, and pass laws regarding the environment), they also stipulate the Federation's duties. The environmental rights of legal entities in the same way include the two aspects of rights and duties. For example, since articles 12 and 18 of the Constitution of the USSR promulgated on 7 October 1977 stipulate the right of legal entities to utilize the environment, they also stipulate their duty to protect the environment. With regard to the environmental rights of citizens, from the point of view of the provisions of the constitutions of the various countries currently in force, constitutions which stipulate environmental rights in the form of citizen's "duties" or simultaneously in the form of citizens' "rights" and "duties" are in the majority, while constitutions which stipulate environmental rights only in the form of citizens' "rights" are relatively fewer. This circumstance is brought about by the fact that the right of citizens to enjoy a good environment and their duty to protect the environment are frequently interconnected and, moreover, the stipulation of the citizens' duty to protect the environment tends to assist in the realization of their right to enjoy that environment.

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[2] Complete Works of Marx and Engels, Chap 16, p 16.

In sum, there are environmental rights in both the narrow and the broad sense. Environmental rights in the narrow sense generally indicate the environmental rights of citizens, i.e., the citizens' right to enjoy a good, proper natural environment. Environmental rights in the broad sense indicate generally the rights to be enjoyed and the duties to be assumed by all major bodies having some connection with the law (including natural people, legal entities, special legal entities--the state) with respect to the natural environment they exist in; that is, the state, organizations, groups, and enterprises and units such as factories and mines, as well as the citizens all have the right to utilize and enjoy the natural environmental conditions they exist in, and they also all have the duty to protect the natural environment and prevent environmental pollution. Although the narrow and broad senses of environmental rights reflect the different points of view people have adopted toward the problem, as well as the different areas to be covered by environmental protection, nevertheless whether one proceeds from the point of view of study and theory or from the point of view of the requirements of the actual situation, the concept of environmental rights in the broad sense is more important and more valuable.

Regarding China's Laws and Environmental Rights

We should be aware of the fact that the laws of China do have some provisions concerned with environmental rights. For example, section 1, item 11 of the "Constitution of the People's Republic of China" stipulates: "The state shall protect the environment and natural resources, and shall prevent and deal with environmental pollution and other types of public harm." This stipulation belongs in the category of the environmental rights of nations. And the "Environmental Protection Law of the People's Republic of China (provisional)" more specifically concerns the rights and duties of the state, legal entities and citizens in protecting the environment. For example, article 2 of this law stipulates: "The duty of the environmental law of the People's Republic of China is to guarantee, in the process of building the four modernizations, the reasonable use of the natural environment, and the prevention and cure of environmental pollution and the spoiling of the ecology, in order to create a clean and proper living and work environment for the people, protect the people's health, and promote their economic development. The phrase "in order to create a clean and proper living and work environment for the people" can be understood as the state's recognition of the "people's right to enjoy a clean and proper environment." In addition, other laws and regulations also stipulate rights and duties in certain environmental protection areas; for example, article 7 of the "Forest Law of the People's Republic of China (provisional)" stipulates: "Planting trees and creating forests, and caring for them, is the glorious duty and right of all the people of the nation."

However, one can see from these laws that the standard of our country's laws on environmental pollution is not clear or complete enough. China's constitution only briefly stipulates the responsibility of the nation with regard to environmental protection, and does not stipulate the rights and duties of organizations, groups, enterprises and units such as factories and mines, and citizens in environmental protection work. Although the stipulations in China's environmental protection law and other related laws and regulations regarding the responsibilities and duties in environmental protection work of the nation, units, and citizens are comparatively clear and complete, nevertheless they seldom deal with, or are not clear, regarding the rights of the nation, enterprises and units, and citizens to enjoy good environmental conditions. For this reason, the question at present is not whether or not we want to stipulate the issue of environmental rights in our country's laws, but how to further revise, round out, clarify, and bring into prominence the question of environmental rights.

The "Resolutions Regarding the Revision of the Constitution and the Setting Up of a Committee to Revise the Constitution" resulting from the Third Session of the Fifth People's Congress point out that, regarding the revision of the constitution, we must turn the matter over to all the people of all nationalities in the entire nation for discussion, in order to pool their wisdom and formulate a constitution that is adapted to the general duties and requirements of China in this new period of historical development. The revision of China's environmental protection law is also in line with this guiding principle. On the basis of this spirit, and in view of the present condition of the stipulations in China's laws regarding environmental rights as well as the actual needs of China's environmental protection work, I consider that in China's Constitution we should, in a principled way, stipulate the rights and duties with regard to environmental protection work of the nation, units, and citizens; and in civil law, economic law, and the various other laws relating to environmental protection we should further clarify and make more specific the rights and duties of the three groups with regard to environmental protection. The reasons are as follows:

1. Due to the important effect of the protection of the natural environment on China's four modernizations project, it is necessary to clarify and emphasize environmental rights in our laws.

At present, China has already entered a new period of historical development. The general duty of our party and nation during this new period of historical development is to unite all the people of the various nationalities in China so that they, with one mind and one heart, in a planned way, and according to the proportionate representation of their numbers, can achieve greater, faster, better, and more economical results in developing our socialist economy, and build a strong, modern, socialist country with a high level of democracy and civilization. Since China's natural environment and natural resources are the material basis for China's modernization project, and also constitute the place and the conditions under which the people of China will make a concerted effort toward building the four modernizations, they are very closely connected with the speed and prospects of the four modernizations project. Since the establishment of a fine and proper work, study, and living environment is an important aim in the building of socialist modernization and is also an important aspect of being a strong, socialist, highly civilized nation, it has a bearing on the immediate well-being of all the people of China. However, the present situation of environmental protection in China is definitely not adapted to the requirements of the new period. Although we have done a great deal of work, nevertheless environmental pollution still continues to develop, and has already become a new, important problem for the building of the four modernizations. According to statistics, over 100 million tons of smoke and dust are discharged into the environment every year in China, along with 15 million tons of sulphur dioxide, making it one of the top countries in the world in terms of the quantity of pollutants discharged. Throughout our country each year over 25 billion tons of polluted water, resulting from both industrial and ordinary use, are discharged, so that economic losses each year due to water pollution alone amount to 5.5 billion yuan, a figure which is substantially equivalent to the amount lost through air pollution. The unchecked proliferation of pollutants constitutes a vast waste of our natural resources and energy sources. At present China's utilization rate for energy sources is only 28 percent, while the energy source utilization rate for the United States and Japan is over 50 percent; even if we raise our utilization rate to 40 percent, we will still be wasting 100 million yuan and several tens of millions of tons of fuel per year. With regard to the natural environment, over the past 30 years the desertification of land in China has increased by 60,000 square kilometers; each year our forests are reduced by 2.5 million hectares; because of soil erosion, each year we lost over 5 billion tons of soil, and with it an amount of nitrogenous, phosphate, and potash fertilizer equivalent to the total quantity of chemical fertilizer applied by China's agriculture in a year; and the area of inland bodies of water has been reduced by 7 percent [over the past 30 years] due to the blind construction of farmland around lakes. All these factors have a far-reaching and serious negative effect on the development of China's industrial and agricultural production. If we want to solve these problems, it will be necessary to mobilize the forces of the state, legal entities and all of the people, and for this it will be necessary to stipulate clearly in our national laws for the new historical period, the rights and duties of the state, legal entities and citizens regarding environmental protection. Otherwise, if the laws for the new historical period do not reflect the new period's problems, then the continuing development of environmental pollution will become a bitter result and a serious obstacle to the building of the four modernizations.

2. To round out the concept of environmental rights and bring it into prominence in our laws is an important guarantee of doing a good job in environmental protection work in China.

Due to the fact that the factors creating China's environmental pollution are exceedingly complex, environmental protection is a synthesis involving many fields of study and many departments, and this means that the fundamental outlet for China's environmental protection work lies in implementing the party's mass line, relying on the masses, and having everyone set to work. However, some of our comrades are in the habit of engaging in a "stupid people" policy, which has arisen from an unwillingness to accept the fact that socialist China does have an environmental pollution problem, and afterward, when pollution became so serious that it could no longer be ignored, they tried to minimize it or gloss over it, with the result that they dare not bestow environmental rights on the masses for fear that once this is done the masses will raise improper demands. This is one of the important causes of the backwardness of China's environmental protection work. Actually, environmental rights definitely do not imply the making of harsh demands regarding the environment that depart from reality; having the right to enjoy a good environment, one also has the duty to protect the environment; once the masses make the connection between the quality of the environment and their own immediate well-being, this will become a powerful social force for protecting the environment. In addition, environmental rights are the same as the right to democratic freedoms, the right to work, and the right to rest; in order to change programmatic, guiding principles into concrete principles that can be used as a basis for litigation, they must still go through the process of being subject to concrete, actual legal provisions; it is definitely not the case that, having environmental rights, one can then instigate environmental litigation at will or make trouble without just cause. In actuality, clearly stipulating environmental rights in our laws is a means of regularizing the mass line in the party's environmental protection work in the form of a fundamental right of the people. This not only places on all levels of government the responsibility for safeguarding the people's environmental rights, but as a result, places the problem of environmental protection on the agenda of government work, and moreover, bestows on the broad masses the right to supervise all activities that cause environmental pollution and to demand the improvement of environmental conditions. In this way, China's environmental protection work will have a continuous forward impetus and legal guarantee.

3. Under our socialist system, environmental rights are a necessary condition for the exercise of citizens' right to work, right to rest, and other fundamental rights. China's Constitution, promulgated many times over, clearly stipulates many basic rights for our citizens, and this is a concrete manifestation of the popular, democratic nature of socialist constitutions. For example, article 48 of the "Constitution of the People's Republic of China" promulgated in 1979 stipulates: "Citizens shall have the right to work. The state, based on the principle of taking all factors into consideration, will make arrangements for the citizens to labor and take up occupations and, on the basis of increasing production, will gradually increase remuneration for labor, improve working conditions, strengthen labor protection and improve the collective well-being, in order to guarantee the citizen's enjoyment of these rights." Article 49 stipulates: "Workers have the right to rest. The state shall fix the times for labor and the systems for taking leave, and shall gradually expand the workers' material conditions for rest and recuperation, in order to guarantee the workers' enjoyment of these rights." From the point of view of

environmental protection, these working conditions and labor protection measures indicate principally the protection of the workers' work environment; and the material conditions for the workers' rest and recuperation include the living environment in which the workers rest. Whether work environment or living environment, both are part of the natural environment on which people depend to exist. Although requirements for the quality of a work environment differ according to whether the work is physical or mental, the quality of that work environment will always have an effect upon a person's spirit and psyche, influence the worker's enthusiasm and creativity, and have an effect upon the quantity and quality of the material and spiritual wealth created by the worker. As for the material conditions for workers' rest and recuperation, in addition to clothing, food, shelter, and transportation, fresh air, and fine, agreeable surroundings with blue sky, clear water, and green shade trees are also required, and this will have an effect on the preservation and renewal of their capacity for labor. One can see, then, that the citizens' right to work and right to rest are inseparable from the protection of the natural environment. If the work or living environment is seriously polluted, the workers are without protection during their work time and cannot get proper rest during their rest time; the workers' health and lives will be threatened by all kinds of polluting factors, and the workers' rights to work and to rest will become empty words. At present the situation of China's environmental pollution is still comparatively serious, and to one degree or another it has already had a negative effect upon the exercise of citizens' rights to work and to rest. For example, noise pollution and the pollution of the air and water sources in the cities of China are already problems urgently in need of a solution, and have already had some negative effect on people's work, study, and rest. These problems are already arousing more and more the serious attention of the state and the people; moreover, positive measures for their gradual solution are in the process of being adopted. However, once we have stated that we want to guarantee the citizens' exercise of their rights to work and rest, and other basic rights, then we must clearly stipulate that citizens enjoy environmental rights. For this reason, clarifying and emphasizing citizens' environmental rights is really a problem urgently in need of a solution in China's law, and a pressing problem that is close to the people's hearts.

(Responsible editor of this article, Shen Xi [3476 3556])

9634
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TEXT OF PRC MARINE ENVIRONMENTAL PROTECTION LAW

OW280545 Beijing XINHUA Domestic Service in Chinese 0217 GMT 24 Aug 82

[Text] Beijing, 24 Aug (XINHUA)--Law on Marine Environmental Protection of the People's Republic of China

Chapter I

General Principles

Article 1

The Law on Marine Environmental Protection of the People's Republic of China is formulated to protect its marine environment and resources, prevent pollution, ensure ecological balance, protect the health of the people and promote the development of marine undertakings.

Article 2

The law is applicable to the inland seas and territorial waters of the People's Republic of China as well as to other sea waters under the jurisdiction of the People's Republic of China.

The law is to be observed by all vessels, drilling platforms, aircraft, submersible devices, enterprises, institutions and individuals engaged in navigation, prospecting and development of natural resources, production, scientific research and other activities in the sea waters within the jurisdiction of the People's Republic of China.

The law also applies to cases involving pollution of sea waters within the jurisdiction of the People's Republic of China as a result of dumping of waste materials in foreign waters.

Article 3

All institutions and individuals entering the sea waters under the jurisdiction of the People's Republic of China have the responsibility of protecting the marine environment and the duty of surveilling and informing against acts of polluting the marine environment.

Article 4

The concerned departments under the State Council and the people's governments of the coastal provinces, autonomous region and municipalities directly under the jurisdiction of the central authorities may, in view of the need to protect the marine environment, designate special marine conservation zones, marine natural conservation centers, seashore resorts and tourist spots and may adopt relevant protective measures. However, the setting up of special marine conservation zones and marine natural conservation centers must have the approval of the State Council.

Article 5

The environmental protection departments under the State Council are in charge of marine environmental protection work throughout the country.

The state departments of oceanographic administration are responsible for organizing investigation, monitoring, surveillance and scientific research of the marine environment. They are also in charge of environmental protection work with regard to preventing pollution caused by prospecting and development of offshore oil resources and the dumping of waste materials.

The harbor superintendency administration of the People's Republic of China is responsible for controlling, investigating and handling pollution caused by vessels, as well as surveilling the harbor waters. It is also in charge of environmental protection work with regard to preventing pollution from vessels.

The organizations of state fishery administration and fishing port superintendency administration are responsible for controlling pollution from vessels in fishing ports and for monitoring the waters of fishing ports.

The military environmental protection departments are responsible for controlling pollution from naval vessels and for monitoring the waters of naval ports.

The environmental protection departments of the coastal provinces, the autonomous region and municipalities directly under the jurisdiction of the central authorities are responsible for organizing, coordinating, controlling and inspecting the marine environmental protection work within their respective administrative regions. They are also in charge of environmental protection work with regard to preventing pollution caused by coastal projects and pollutants from the land.

[OW280547] Chapter II

Prevention of Marine Environmental Pollution From Coastal Projects

Article 6

Before working out a plan for its work, the competent units in charge of coastal construction projects must conduct scientific surveys on the marine environment and select a suitable site for construction in light of natural and social conditions. With the relevant state regulations in mind, the concerned units must write a report on the estimated effects of the project on the environment.

Article 7

Appropriate measures must be taken to protect aquatic resources in building harbors, oil wharves and tidal power generation and water conservancy projects at river mouths. The necessary facilities must be built to enable fish to pass through when dams are constructed which would otherwise block the migratory passage of fish and crabs.

Article 8

Ports and oil wharves must be installed with equipment for collecting and treating residual and waste oil, oil-contaminated water and waste materials. Besides, antipollution equipment, monitoring and warning devices must also be installed.

Article 9

The development and utilization of tidal land must be subject to overall planning and strict control. Quarrying projects and projects for reclaiming land from the sea must be brought under strict control. Where such projects are necessary, a report on the estimated effects of the project on the environment, on basis of the investigation and study of the economic returns of the project, must be submitted to the environmental protection departments of the provinces, autonomous region and municipalities directly under the jurisdiction of the central authorities for examination and approval. Large reclamation projects must be reported to the environmental protection departments of the State Council for examination and approval.

Destruction of shelter forests, scenic forests, scenic rocks, mangroves and coral reefs in coastal areas is prohibited.

Chapter III

Prevention of Pollution to the Marine Environment From Offshore Oil Prospecting and Development

Article 10

Before submitting a plan for its work, the enterprises or competent units engaged in offshore oil exploitation must submit a report on its estimated effects on the marine environment to the environmental protection departments of the State Council for examination and approval. The report should include effective measures for the prevention of pollution to the marine environment.

Article 11

Effective measures must be taken to protect fishery resources when demolition is required in offshore petroleum prospecting and other operations.

Article 12

It is necessary to strengthen control over oil used in the process of petroleum prospecting and exploitation in order to prevent accidental oil leaks. The residual and waste oils must be recovered and must not be allowed to be discharged into the sea.

Article 13

The oil-contaminated water and oil-containing mixtures of offshore oil drilling vessels and drilling and extracting platforms must not be discharged directly into the sea. They must be recovered and treated before discharge and the oil content of the discharged fluids must not exceed the state standard.

Article 14

The oil-containing industrial garbage of oil drilling vessels, and drilling and extracting platforms must not be disposed into the sea. Fishing zones and sea-lanes must not be polluted when disposing of other industrial garbage.

Article 15

In oil testing operations, oil and oil-containing mixtures must not be discharged into the sea and measures must be taken to see that gases and oil being tested are burned completely in order to prevent the pollution of the sea.

Article 16

It is essential that gas pipelines and oil storage installations on the sea are resistant to seepage, leakage and corrosion and that they are always kept in good shape to prevent accidental oil leaks.

Article 17

In prospecting and exploiting offshore oil resources, it is necessary to prepare installations and equipment to prevent pollution and take effective technological measures to avoid accidental blowouts and oil leaks.

Accidental blowouts and oil leaks must be reported immediately to the state oceanographic administration departments while at the same time taking effective measures to control and eliminate the oil pollutants. Such accidents are subject to investigation and handling by the state oceanographic administration departments.

[OW280549] Chapter IV

Prevention of Marine Environmental Pollution and Damages by Pollutants From Land Sources

Article 18

To discharge harmful matter into the sea, coastal units must strictly implement the discharge standards and relevant regulations promulgated by the state or the people's governments of provinces, the autonomous region or municipalities directly under the central government.

No new sewage outlets may be constructed in marine natural conservation centers, aquatic product breeding grounds or seaside scenic and tourist resorts. Sewage outlets built before the promulgation of this law, where the pollutants discharged fail to meet state pollutant discharge standards, should be corrected within a specific time limit.

Article 19

Waste water containing strong radioactive matters is forbidden from being discharged into the sea.

Waste water containing weak radioactive matters, which indeed has to be discharged into the sea, must be handled according to state radioactive protection regulations and standards.

Article 20

Medical waste water containing germs or viruses of infectious diseases and industrial waste water must be treated and strictly sterilized to eliminate the germs or viruses before being discharged into the sea.

Article 21

Discharge of industrial and household waste water containing organic and nutritious matters into bays, semisealed off sea waters and other sea waters with relatively poor self-cleaning abilities should be controlled to prevent the sea waters from becoming overnutritious.

Article 22

In discharging heated waste water into the sea, measures should be adopted to ensure that temperatures of nearby fishery waters meet state water quality standards and to avoid the harmful effects of heat pollution on marine resources.

Article 23

State regulations and standards on safe application of agricultural chemicals should be followed when applying agricultural chemicals on coastal farmlands.

Article 24

Without the approval of the environmental protection departments of the coastal provinces, autonomous region and municipalities directly under the central government, no unit may dump or pile up tailings, slag, coal ash and cinder, garbage or other waste materials on seashores and beaches. When dumping and treatment grounds for waste materials are legally approved for establishment on seashores or beaches, protective dikes should be built to prevent the waste materials from being washed into the sea.

Article 25

The environmental protection departments and river system management departments of the coastal provinces, autonomous region and municipalities directly under the central government should strengthen the control of rivers flowing into the sea--preventing and controlling pollution--to maintain good water quality at the mouths of the rivers.

Chapter V

Prevention of Marine Environmental Pollution and Damages by Ships

Article 26

In the sea waters within the jurisdiction of the People's Republic of China, ships are forbidden to discharge oils, oily mixtures, waste matter and other harmful matter in violation of the stipulations of this law.

Article 27

Tankers over 150 gross tonnage and nontankers over 400 gross tonnage should be equipped with the appropriate antipollution facilities and apparatuses.

Tankers under 150 gross tonnage and nontankers under 400 gross tonnage should be equipped with special containers for recovering oil residue and waste oil.

[OW280550] Article 28

Tankers whose gross tonnage exceeds 150 dun and nontankers whose gross tonnage exceeds 400 dun should keep their own oil records.

Ships that carry over 2,000 dun of cargo oils in bulk should keep a valid "Certificate of insurance of civil responsibility for damage done by greasy dirt or other financial assurances," or a "Certificate of credibility concerning civil responsibility for damage done by greasy dirt" or they should provide other assurances of financial credibility.

Article 29

When discharging oily waste water, tankers whose gross tonnage exceeds 150 dun and nontankers whose gross tonnage exceeds 400 dun should comply with state requirements and regulations governing the discharge of waste water ships and should truthfully indicate the matter in their oil records.

Article 30

When discharging deck washing water and other residual matter, ships that carry poisonous and corrosive cargoes should comply with state regulations governing the discharge of waste water from ships and should truthfully indicate the matter in their log books.

Article 31

When discharging radioactive matter, nuclear-powered ships and ships that carry radioactive matter should observe the provision in Article 19 of this law.

Article 32

When loading and unloading oils, ships should follow the operation procedure and take effective precautionary measures to prevent oil leakage accidents.

Article 33

Shipbuilding, ship-repairing, shipbreaking and salvage units should be equipped with pollution prevention instruments and installation. While in operation, they should take precautionary measures to prevent oils, oily mixtures and waste matter from polluting the sea.

Article 34

When a ship creates pollution because of inappropriate discharges of oil, oily mixtures and other harmful matter or because of the falling of poisonous and corrosive cargoes into the sea, it should take immediate measures to control and eliminate the pollution, report the incident to the nearest port administration supervisor and accept his investigation and handling.

Article 35

When a ship is damaged in an accident that results or may result in serious pollution and damage to the marine environment, the PRC Port Administration supervisor is authorized to take compulsive measures to avoid or reduce the pollution and damage.

Article 36

All ships are obliged to oversee cases of marine pollution. They should immediately report to the nearest port administration supervisor. The fishing vessels may report to the nearest fishing administration, fishing port supervisory and management organs as soon as they notice activities that violate regulations and cause pollution.

Article 37

When pollution is caused by a ship sailing, berthing and operating in waters under the jurisdiction of the PRC, the PRC Port Administration supervisor will board the ship to investigate and handle the matter. Authorized by the port administration supervisor, civil employees of government departments concerned may also board the ship to investigate and report the investigation's results to the port administration supervisor for handling.

Chapter VI

Prevent Dumped Discards From Polluting and Damaging Marine Environment

Article 38

Without the approval of the state oceanographic administration departments, no unit is allowed to dump discards in waters under the jurisdiction of the PRC.

Units that need to dump discards should file applications with the state oceanographic administration departments. They are allowed to dump discards only after the State Oceanographic Administration Department has examined and approved their applications and has issued them permits.

Article 39

Units that have been permitted to dump discards should do so in designated areas according to the time limit and conditions stated in their permits. The approving department should verify the discards after they have been loaded. Discards to be dumped from ships should be verified by the port administration supervisor who is sailing away from the port.

Article 40

Units that have been permitted to dump discards should make a detailed record of the dumping process and report, in writing, to the approving department after the dumping is completed. Ships that dump discards should report, in writing, to the port administration supervisor who is sailing away from the port.

[OW280915] Chapter VII

Legal Liability

Article 41

The related department specified in Article 5 of this law as being responsible for the work may instruct those who have violated this law and have caused or possibly caused pollution of and damage to the marine environment to bring the pollution under control within a specified time limit and to pay for the expenses of getting rid of the pollutants and eliminating the pollution and to pay for the pollution and damage done to the state. It may also issue warnings or impose fines on them. If the litigant refuses to accept the ruling, he may begin legal procedures at the people's court within 15 days after he has received the ruling. If he neither begins legal procedures nor carries out the instructions of the ruling, the related department in charge of this matter may ask the people's court to enforce the ruling.

Article 42

The unit or individual suffering damages caused by marine environmental pollution has the right to ask the party that has caused the pollution and the damage to pay for the losses. Disputes with regard to the liability and the amount of compensation may be handled by the related department in charge of this matter. If the litigant refuses to accept the ruling, the matter may be solved according to the procedure specified in the provisions of the "PRC Law of Civil Procedure (for trial implementation)" or may take direct legal procedures in the people's court.

Article 43

Liability to pay compensation is exempted if damages from pollution are inevitable under one of the following conditions after reasonable and timely measures have been taken to protect the marine environment:

1. Act of war;
2. unavoidable natural disaster;
3. negligence or other errors made by the related department in charge of lighthouses or other navigational aid facilities in the course of performing its duties.

The third party must assume the liability to pay compensation if the pollution of and damage to the marine environment are caused entirely by errors of or something deliberately done by the third party.

Article 44

When public or private property has been seriously damaged or when there has been loss of life or injuries because of pollution of and damage to the marine environment in violation of this law, the judicial organ may take action against the person or persons directly responsible for such pollution or damage to determine criminal liability according to law.

Chapter VIII

Appendices

Article 45

The definition for the following terms cited in this law are as follows:

1. The "pollution of and damage to the marine environment" refer to the detrimental effects caused by the direct or indirect discharge of materials or energy into the marine environment harming marine life and resources, endangering human physical conditions, hampering fishery and other legitimate marine activities and impairing the quality of ocean water and the environment.

2. "Fishery zones" refer to spawning grounds, feeding grounds, overwintering grounds and migration passages for fish and shrimp as well as grounds for raising fish, shrimp, clams and seaweed.

3. "Oils" refer to any type of oil and its refined products.

4. "Oil-containing mixtures" refer to mixtures with any oil content.

5. "Discharge" refers to any act of discharging pollutants into the ocean including pumping, overflowing, seeping, gushing and dumping.

6. "Dumping" refers to the act of discharging wastes and other harmful materials into the ocean via ships, aircraft, platforms and other means of transportation including the act of abandoning ships, aircraft, platforms or other floating implements.

Article 46

The existing rules and regulations with regard to the protection of the marine environment that contradicts this law must take this law as the criterion.

Article 47

The Environmental Protection Department of the State Council may work out detailed rules and regulations in accordance with this law and submit them to the State Council for approval and enforcement.

In accordance with this, the department concerned of the State Council, the standing committees of the people's congresses and the people's governments in various coastal provinces, autonomous region, and municipalities directly under the central government may formulate specific, detailed measures for the enforcement of this law in close connection with the actual conditions in the respective department or area.

Article 48

This law will come into effect as of 1 March 1983.

CSO: 5000/4077

'RENMIN RIBAO' COMMENTATOR ON MARINE LAW

HK270651 Beijing RENMIN RIBAO in Chinese 25 Aug 82 p 3

[Commentator's article: "Exploit Marine Resources, Protect Marine Environment"]

[Text] The "PRC Law on Marine Environmental Protection," adopted by the 24th Congress of the 5th NPC Standing Committee, is of great importance to exploiting marine resources, to protecting marine environment and to developing our country's marine undertakings in an all-round way.

China's continental coastline is more than 18,000 kilometers long. The country has a vast territorial sea and has jurisdiction over a vast maritime area. The country is also endowed with rich marine resources. There has been a quick development of various marine undertakings in China such as coastal economic construction, marine petroleum, sea transport, sea fishery, refining salt through seawater, and marine research and study. At the same time, more and more harmful waste has been discharged into China's seawater every year--sewage alone amounting to billions of tons. China's marine environment has been polluted to varying degrees. Certain river mouths, sea areas, seaports and coastal regions have suffered relatively serious environmental pollution; there has been an increase in the poisonous substances retained within marine organisms, thus causing a shift of fishing zones to outer sea areas; and beach breeding farms in a very few areas lie uncultivated due to pollution. Certain famous seashore resorts have also been polluted. Therefore, paying equal attention to exploiting marine resources and protecting marine environment is an important task in developing China's marine undertakings.

Protecting the marine environment requires a correct policy on exploitation, science and technology, and also requires strict management. In particular, it requires a sound legal system. This is an important international experience gained in protecting the marine environment. Since the 1970's, China has issued a number of marine regulations which have played some role in protecting marine environment. However, due to the fact that China began late on its legislative work concerning marine environment, it only issued some regulations aimed at protecting certain objects or some specific sea areas. Such regulations cannot fully meet the needs of the development of China's marine undertakings. The currently promulgated Law on Marine Environmental Protection is a comprehensive code applicable to all marine waters of China. The Law on Marine Environmental Protection gives comprehensive consideration to various marine undertakings' requirements for environmental conditions, and contains clear and definite regulations for dealing with the current major activities that are polluting our marine environment. The promulgation and enforcement of this code mark a great advancement in China's legislative work concerning marine environment.

Will the enforcement of legal management of the dumping of wastes into the sea hamper the growth of our coastal economy and certain marine development projects? We should unequivocally say, no, it will not. The formulation of the code is not aimed at passively preserving the natural features of the ocean but is aimed at correctly handling the relationship between exploiting marine resources and protecting marine environment, and at promoting an all-round development of various marine undertakings. The Law on Marine Environmental Protection does not absolutely forbid the use of the ocean to dispose of waste. The code demands a scientific and rational application of the ocean's purifying function, and also demands that waste be properly discharged on the premise of maintaining a fine marine environment. It is necessary to impose restrictions on acts that seriously impair the marine environment. Such restrictions conform to the overall and long-term interests of China's marine undertakings; they must be imposed even at the cost of adversely affecting certain activities.

[HK270653] The major characteristics of marine environmental pollution are widespread pollution of aquatic resources and extensive proliferation of pollution. Therefore, merely relying on environmental protection departments to promote the prevention and control of marine environmental pollution is not enough. Units that are engaged in exploiting marine resources and building marine projects must conscientiously carry out the regulations listed in the Law on Marine Environmental Protection, bring the work of environmental protection into construction plans, and avoid taking the roundabout course of creating pollution prior to adopting measures to control it. All units that use the ocean for the disposal of waste must strictly abide by the Law on Marine Environmental Protection and dispose of waste in a planned way; units which have gone beyond the limit set on the disposal of waste must actively adopt measures to control their disposal of waste. Relevant scientific research departments must actively carry out scientific research on the prevention and control of marine pollution and provide a scientific basis for implementing the Law on Marine Environmental Protection and promoting the prevention and control of marine pollution.

Marine environmental protection departments and local governments in coastal areas bear greater responsibility for implementing the Law on Marine Environmental Protection and for protecting our marine environment. They must conscientiously do their duty, strictly carry out the management work and enforce the law in all earnestness. At the same time, they must also promote relevant propaganda and educational work, create a common social practice of taking good care of marine environment, and mobilize the masses to participate in marine environmental management, so as to successfully promote China's marine environmental protection and to benefit future generations.

CSO: 5000/4077

KEY MEASURES TO PREVENT, CONTROL MARINE POLLUTION STRESSED

Beijing RENMIN RIBAO in Chinese 25 Aug 82 p 3

[Article by Zhu Xiaocheng [4376 2400 4453] and Yang Jinsen [2799 6855 2773]: "Grasp the Key Measures in Preventing and Controlling Marine Pollution"]

[Text] In an accident in 1969, 110,000 gallons of No 2 fuel oil leaked into the ocean at West Falmouth, Jamaica. A large number of marine organisms were killed; a long time later the shellfish were still not edible. Since then, people have gradually recognized that after a large quantity of waste water, petroleum, insecticides, and other poisonous substances have been allowed to enter the ocean to pollute the marine environment, mankind is beginning to face retribution and there is a need for prevention and treatment.

In order to prevent ocean pollution effectively in order to protect the marine environment, a new science has emerged--marine environmental science--to study the ways by which pollutants enter the ocean, the pattern of their distribution and change, and their effects on the marine environment and human health, so as to provide a basis for the work of marine environment protection. Meanwhile, a number of marine environmental protection organizations have appeared in coastal countries and world organizations to produce a body of marine environmental protection laws and regulations to strengthen the work of managing the marine environment through administrative and legislative methods.

Ocean pollution is characterized by extensive sources of pollutants, large areas of dispersion, and a prolonged period of retention. Some key measures must be grasped in prevention and control work:

1. Attention must be given to the sources of pollutants. The work of managing the marine environment must have prevention and control as the primary goal in order to manage the source of pollutants well. Pollutants produced by human activities enter the ocean through rivers, rain, falling dust, artificial dumping, waste discharge of ships, and the mining of offshore oil wells. In China the major factors that are polluting and damaging the marine environment include the following: 1) Pollutants of land origin: according to a survey of related departments, 5-6 billion tons of sewage and industrial waste water enter the ocean from China every year, in addition to 10 million tons of other waste materials. 2) Wastes discharged from ships: at present, China has several hundred thousand motorized boats of all kinds. Every year, foreign ships enter

Chinese harbors and sail through seas under Chinese jurisdiction several thousand times and they discharge a large quantity of oil-containing waste water into the sea. 3) With the prospecting and developing of offshore oil, the quantity of petroleum from runoff, gushing, dripping, and leaking amounts to a great deal. 4) Poorly-planned marine engineering structures cause some deepwater ports and navigation channels to silt up and some local areas of the sea to lose ecological balance. 5) Poisonous and harmful substances dumped by people.

As we launch the work of protecting the marine environment, the work of managing these pollutants should be emphasized in order to reduce the amount of pollutants entering the sea as much as possible so as to avoid the tortuous road of polluting first and treating later.

2. Dealing with the major harmful substances: There are many pollutants of the ocean, and the major poisonous substances should be specially dealt with. When poisonous substances enter the sea they are extremely harmful to marine organisms and human health, and must be strictly controlled.

3. Major areas of the sea should be emphasized. The target of the marine environmental protection work is all seas, but the protection of some key areas should be stressed. The dumping of solid wastes into deepwater ports and navigation channels should absolutely be prohibited. Poorly-planned engineering structures should be prevented from causing silting and obstruction. The effluents of land-origin wastes should not be placed at marine products' breeding sites, coastal resort areas, natural preserves, etc. The discharge of waste water containing pathogens of infectious diseases and other poisonous substances, in particular, should be forbidden in order to preserve the clean quality of the water. Estuaries of important fishing areas should meet the "Fishery Water Quality Standard" requirements. This is the only way to have suitable environmental conditions for all activities involved in developing and utilizing the seas, so that the various marine resources may be reasonably developed and used in a manner of overall development of marine enterprises.

6248
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TERMS IN LAW ON MARINE ENVIRONMENTAL PROTECTION EXPLAINED

Beijing RENMIN RIBAO in Chinese 25 Aug 82 p 3

[Article by National Bureau of Oceanography]

[Text] Natural Marine Preserve. To develop scientific research for the purpose of protecting the marine environment and its ecosystem, a particular area of the sea is demarcated for protection, this type of area is called a natural marine preserve. The state adopts effective measures with regard to the water, living organisms, and minerals within the natural marine preserve in order to protect the integrity of its natural resources. This is an important task in marine environmental protection work.

Self-Purification Capacity of Seawater. After pollutants have entered the sea, through the comprehensive action of the seawater, they will gradually decompose and will not pollute the marine environment. This ability of seawater to eliminate pollutants is called the self-purification ability of seawater. This ability is limited. When the quantity of harmful substances entering the sea exceeds a certain limit, the marine environment will be polluted.

Environmental Impact Statement. At the time of new construction, reconstruction, or expansion of marine engineering projects, the effect of the engineering project on the marine environment must be evaluated, and effective prevention and control measures should be proposed in accordance with the standard legal regulations concerning the marine environment. This type of written report is called an environmental impact statement. When the environmental impact statement is approved by the related departments, the engineering construction unit and its supervising department may then compile the planning responsibility documentation of the construction item. This is an important measure of marine environmental pollution prevention.

Eutrophication of Seawater. Due to the addition of waste water containing a large quantity of nutrients such as nitrogen, phosphorus, etc., the nutrients promote the growth and propagation of unicellular algae and protozoa in great quantities, causing the seawater to be anoxic. Fish and shellfish will die and the quality of the seawater will deteriorate. This type of phenomenon is called eutrophication of seawater. The major method of controlling eutrophication of seawater is to remove the nutrients from the waste water. Chemicals can also be used to control the multiplication of algae.

Semi-Enclosed Sea. Some areas of sea are encircled on two sides or more by land, leaving only one or a few narrow outlets to link with the open sea. This type of marine area is called a semi-enclosed sea. China's Bohai is this type of semi-enclosed sea. The self-purification capacity of the semi-enclosed sea is relatively poor and it can easily be polluted. More effective and strict measures should be adopted for the protection of such areas.

6248
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PROBLEMS OF DEVELOPMENT, ENVIRONMENTAL IMPACT ON SHIYANGHE VALLEY WATER RESOURCES

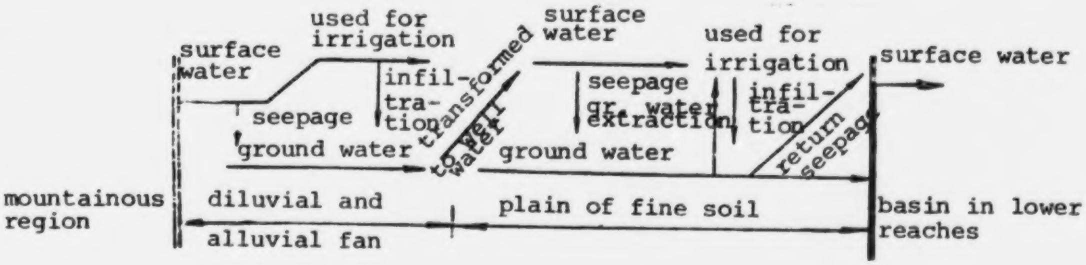
Beijing SHUILI SHUIDIAN JISHU [WATER CONSERVATION AND HYDROELECTRIC POWER TECHNOLOGY] No 7, 20 Jul 82 pp 21-26

[Article by Chen Hesheng [7115 5440 3932] of the Lanzhou Deserts Institute, Chinese Academy of Sciences: "Development of Shiyanghe Valley Water Resources and Its Environmental Impact"]

[Text] 1. Survey of the Development, Utilization and Transformation of Water Resources

The Shiyanghe valley is situated in the eastern part of the Hexi Corridor in Gansu Province and has a history of over 2,000 years of agriculture irrigation. It is a thriving and prosperous region along the old Silk Road. Of the three major inland river systems of the Hexi Corridor, the volume of water in the valley is comparatively less, whereas there is more land under cultivation. Its soil quality is also the best. The Qilian Mountains lie to the south of the valley, while the Tengger and Badan Jaran Deserts lie to the north. It is in an atis region in a cold zone. The area of the valley is 40,160 square kilometers. The 13 large and small tributaries in the valley have their origins in the Qilian Mountains and depend on rainfall and melted snow and ice in the Qilian Mountains for their water supply. After the river leaves the mountains, it enters the Wuwei Basin in the southern part of the corridor. Within the piedmont diluvial fan, there is a large volume of vertical infiltration and ground water supplementation. Because of changes in geological structure and hydrologic conditions, ground water in the form of spring water also seeps out to the earth's surface in large amounts along the shallow cut channel and is the principal source in the lower reaches of the river. Spring water and return water from irrigation flow along the river bed and irrigation ditches through the medium-height and low mountains between the northern and southern basins toward the Minqin Basin in the northern part of the corridor.

There is an inseparable relationship between the ground water and the surface water in this valley. From the upper to the lower reaches, the surface water and the ground water exhibit a rather distinctive pattern of repeated transformation as shown in Figure 1. After Liberation, and particularly since the 1970's, the establishment of water conservancy projects and the development of irrigation facilities have led to the occurrence of great changes in the pattern of water resources as can be seen from Tables 1 and 2 and Figure 2. In the 1950's,


used for
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used for
irrigation
infil-
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tion
ground water
return
seepage
surface water
mountainous
region
diluvial and
alluvial fan
plain of fine soil
basin in lower
reaches

Figure 1. Schematic Diagram of Surface Water and Ground Water Circulation in the Shiyanghe Valley

Table 1. Conditions of Transformation of Surface Water and Ground Water in the Shiyanghe Valley

Region / Period / Item	Wuwei Basin		Minqin Basin	
	1950's	1970's	1950's	1970's
Ratio of surface water transformed to ground water (percent)	70-80	50	80	50
Ratio of ground water seeping out as well water (percent)	80	40		

Table 3. Conditions of Development and Utilization of Water Resources in the Shiyanghe Valley

Item	River water volume	Spring water volume	Utilization ratio of canal system water	Effective area of irrigation	Area of maintained utilization
Unit / Period	100 millions of meters^3		Percent	10 thousands of mu	
1950's	15.59	6.50	0.25-0.30	242.0	103.7
1960's	13.03	4.97	0.35-0.45	309.4	172.2
1970's	12.13	3.20	0.45-0.68	318.5	218.4

Note: For area under irrigation, 1959 was taken as the representative year for the 1950's, 1969 was taken as the representative year for the 1960's and 1979 was taken as the representative year for the 1970's.

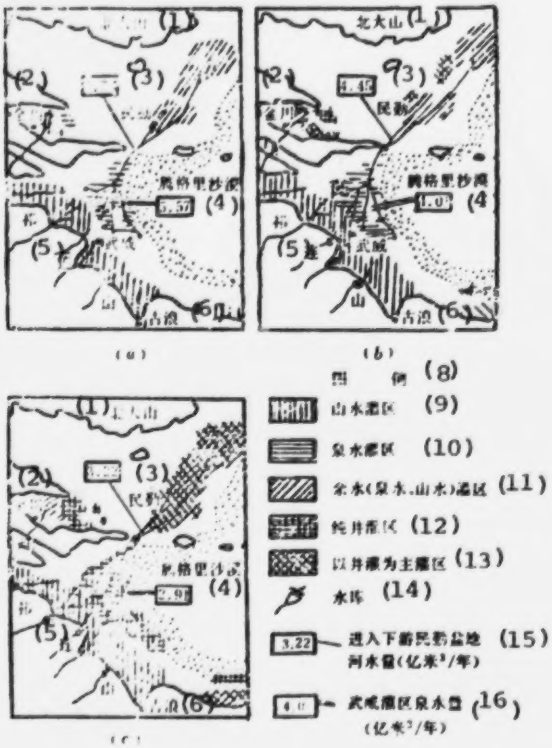
(1)
(2)
(3)
(4)
(5)
(6)
北大山
民勤
腾格里沙漠
武威
古浪
5.57
1.0
2.9
(a)
(b)
(c)
图例 (8)
山水灌区 (9)
泉水灌区 (10)
余水(泉水、山水)灌区 (11)
纯井灌区 (12)
以井灌为主灌区 (13)
水库 (14)
3.22
进入下游民勤盆地河水量(亿米³/年) (15)
4.0
武威灌区泉水量(亿米³/年) (16)

Figure 2. Evolution of Patterns of Utilization of Water Resources in the Shiyanghe[3]

(a) 1950's; (b) 1960's to early 1970's; (c) late 1970's

Key:
1. Beida Mountains
2. Jinchuan
3. Minqin
4. Tenggeli Desert
5. Qilian Mountains
6. Guliang
7. Wuwei
8. Legend
9. Mountain water irrigation region
10. Spring water irrigation region
11. Surplus water (spring water, mountain water) irrigation region
12. Pure well irrigation region
13. Irrigation region in which irrigation is primarily by wells
14. Reservoir
15. Volume of river water (100 million meters^3/year) entering the Minquan Basin in the lower reaches
16. Volume of spring water in the Wuwei irrigation region (100 million meters^3/year)

a relatively stable irrigation system was initially formed on the basis of the natural water system distribution. This system was divided into three irrigation groups consisting of mountain water, spring water and surplus water (river water and spring water). Four reservoirs were built and 2,260.6 kilometers of dry branch canals were reconstructed, with a canal system water utilization rate of 0.30 to 0.35. Thus, there is little concern over the lack of water. In the 1960's and 1970's, a reservoir was built in the mountain region and the standard of the irrigation channels was raised (939.6 kilometers of irrigation canal being lined). This raised the canal system water utilization rate to 0.35-0.45, expanded the area irrigated by mountain water, decreased spring water and resulted in a loss of water resources in the zones contiguous with the mountain water irrigation region and the spring water irrigation region, as a result, wells were dug to extract ground water. This was gradually extended, causing a water shortage in the surplus water irrigation region. In the middle and latter part of the 1970's, reservoirs were built in the valley in the mountainous region except in the case of the Dongda and Zamu Rivers. These reservoirs controlled over 70 percent of the surface run-off. The river water irrigation region was further expanded, with the canal system water utilization rate reaching 0.45-0.68. Large volumes of ground water were extracted in the middle reaches with the result that there were further decreases in spring water so that the spring water irrigation region became for the most part a well irrigation region. There was a rapid decrease in water resources in the surplus water irrigation region (the Minqin Basin) and the volume of ground water extracted amounted to more than 50 percent of the volume of water used for irrigation. At present, utilization of water resources in the Shiyanghe valley has reached a relatively high level, the total amount being used amounting to 1.65 times the total amount of water coming from the mountain rivers (see Table 3). The processes of transformation of the water resources are far more complicated than in the 1950's. The principal arena of transformation has changed from the natural river beds to interfield return, with the scope of transformation having been expanded, the levels of transformation having been increased and the process of transformation having been prolonged.

Table 3. Analysis of Water Resource Utilization in the Shiyanghe Valley in 1979

Volume of river water coming from the mountains (100 million meters^3)	Volume of water utilized (100 million meters^3)			Total amount utilized as percentage of volume of river water coming from the mountains (percent)
	Surface water	Ground water	Total	
14.29	13.78	9.77	23.55	164.8

In summary, the fact that most of the water conservancy construction over the past 30 years has been concentrated in the upper reaches has resulted in an increase in the amount of water used in the mountain water irrigation region and has brought about changes in the mode of utilization of ground water in the middle reaches, with most of the spring water irrigation district being replaced by well irrigation. The volume of surface water in the irrigation region in the lower reaches has been reduced by half so that it has become necessary to develop well irrigation. This mode of development involving careful control in the upper reaches, extraction of excessive amounts in the middle reaches and imbalance in the allocation of water resources in the upper and lower reaches has led to a condition of gradual exhaustion of the water resources in the lower reaches. In addition, allocation of water resources in the lower reaches has also been controlled by artificial water systems in which the boundaries have been set on the basis of administrative districts. This has further aggravated the pattern of imbalance in the allocation of water resources.

2. Effects of the Development of Water Resources on the Environment

Water is a precious natural resource and is also a very important element in the environment. Regardless of whether it is natural or man-made factors that bring about changes in water resources, they will inevitably have corresponding effects on the environment, and, as development of water resources is intensified, will have continually greater effects on the environment.

1) The volume of spring water is continuously decreasing

The spring water zone in the Shiyanghe valley is distributed in an arch-shaped pattern in Wuwei County and Yongchang County. Since the 1950's, spring water has continually decreased. As can be seen from Table 4, there was a decrease of 72.35 percent in the amount of spring water in the valley as a whole in 1979 as compared to 1956, and, as can be seen from Figure 3, there was an extremely distinct decrease in spring water in Wuwei County in the 1970's. At the same time that there was a decrease in the amount of spring water, as can be seen from Tables 5 and 6, the position of the spring water zone shifted lower. The downward shift in the zone increased the breadth of the zone of deficient water between the mountain water irrigation region and the spring water irrigation zone, stimulating further development of well irrigation. As well irrigation was developed, many springs dried up one after the other. In Wuwei County alone, there are more than 230 dried-up spring channels; this amounts to 79 percent of the original spring channels. Table 7 shows the states of change in the numbers of wells and amount of water in the Yongchang irrigation region of Wuwei County.

Table 4. Changes in Spring Water in the Shiyanghe Valley

Year County or Region	1956	1966	1979
Wuwei County	4.689	2.674	0.86
Qinghe, Siba in Yongchang County	2.229	1.528	1.053
Totals	6.918	4.202	1.913

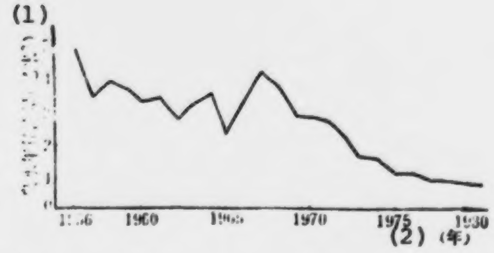

Figure 3. Curve of the Run-Off Process of Spring Water in Wuwei County

Key: 1. Annual amount of spring water run-off (100 million meters^3)
2. Year

Table 5. Distances of Downward Movement of the Spring Water Zone in Wuwei County

Position of appearance of zone	Hongshui River	Dasha and Xiaosha Rivers	Baita River	Haizhi River	Nansha River	Beisha River
Distance (km) of downward movement of zone of occurrence	2	7	5	1	2.5	2

Table 6. Distances of Downward Movement of the Spring Water Zone in Yongchang County

Position of appearance of zone	Siba River	Qinghe Dam	Maniu Dam	Meiqi Dam
Distance (km) of downward movement of zone of occurrence	1.5-2.0	3.0-3.5	2	0.5

Table 7. Changes in Numbers of Springs and Volumes of Water in the Yongchang Irrigation Region in Wuwei County

Item / Year	1963	1974	1975	1978	1979	1980
Springs (sites)	103	22	22	20	17	16
Spring water flow volume (m^3/second)	5.2	1.09	0.59	0.27	0.28	0.19

2) Regional drops in the ground water level

A total of eight well irrigation districts were built in the valley. The pure well irrigation area is about 790,000 mu, with about 530 million cubic meters of water being extracted in a year. The area irrigated primarily by wells is about 850,000 mu, with about 350 million cubic meters of water being extracted. This excess extraction of ground water has caused drops in the ground water level. As the result of a survey in which the present ground water level was compared to that in 1959, the alluvial and diluvial fan group zone in the southern part of the Wuwei Basin has generally dropped 10 to 20 meters, while the zone of spring occurrence has dropped 1 to 5 meters. The Ba region in the northern Minqin Basin has dropped 4.55 meters, the Quanshan region has dropped 4.4 meters and the lake region, which is farthest to the north, has dropped 2 meters. What has drawn particular attention is the fact that the rate of drop has gradually increased. Table 8 shows the extent of drop in the ground water level in the Minqin Basin since 1973 and Figure 4 shows the trend toward drop in the ground water level since 1973 in Well No 94 in Minqin County.

Table 8. Extent of Drop in Ground Water Levels in the Minqin Basin from 1973 to 1979

Year	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979
Extent of drop (m)	0.4	0.5	0.65	0.75	0.85	0.9

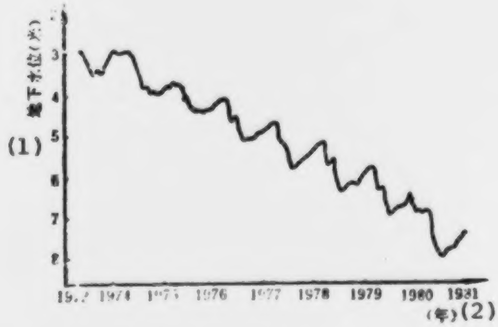

Figure 4. Curve of Process of Drop in the Ground Water Level of Well No 94 in Minqin County

Key: 1. Annual volume of spring water run-off (100 million meters^3)
2. Year

3) Sudden decrease in water resources in the Minqin Basin in the lower reaches and its consequences

The surface run-off in the Minqin Basin in the lower reaches of the Shiyanghe is supplied from three areas: return and emergence of infiltrated water in irrigation regions in the upper and middle reaches; surplus water that leaked down in spring water regions during winter when irrigation was not being carried out; and floodwater, primarily floodwater in the mountainous regions in the upper reaches, and secondarily, floodwater from rainstorms between regions in piedmont areas. As water conservancy projects were built, the capacity to control surface run-off has been strengthened, the amount of canal system infiltration has been strengthened, the amount of canal system infiltration has decreased, the amount of water used in irrigation has increased and ground water in the middle reaches has been extracted. As a result, there has been a gradual decrease in the amount of water emptying into the Minqin Basin. As can be seen from Figure 2, the average in the 1950's was 570 million meters^3/year, the average in the 1960's was 445 million meters^3/year and the average in the 1970's was 322 million meters^3/year, a decrease of 43.8 percent by the 1970's as compared to the 1950's. The decrease in water coming from the upper reaches has brought about changes in the ecological environment in the Minqin oasis which have affected agricultural production and the people's livelihood.

(1) Deterioration in the conditions of agricultural production

There are over 1 million mu of cultivated land in Minquan County about 800,000 mu are actually being planted. The area maintained under irrigation is about 560,000 mu. Because of the lack of water, 275,000 mu of cultivated land in the northern lake region have been changed to staggered planting or have been withdrawn from cultivation. Farmland that has been withdrawn from cultivation does not have a vegetation cover, and under arid climatic conditions undergoes severe wind erosion. In the southern Ba region, there is close to 300,000 mu of farmland in nine communes in which, in addition to the water for planting, the seedlings used to be irrigated twice with river water. After 1974, there was not only insufficient river water to meet the needs for irrigating the seedlings but there was also only enough water to meet 65 percent of that required for planting, the remainder had to be supplemented by well irrigation. In the northern lake region, the ground water level was previously comparatively high, with river water being used only once a year for the purpose of planting the seeds. The ground water level has dropped, and in addition to water for planting the seedlings have to be irrigated two or three times a year in order to obtain a basic harvest.

(2) Destruction of sand-fixation plants and intensification of the process of desert formation

The Minquan basin region is a desert hinterland, with oases accounting for 9 percent of the area of the county as a whole and with desert accounting for 82 percent of the area of the county as a whole. The forests and vegetation surrounding and within the oases are the bases and definitive conditions for withstanding wind-blown sand and maintaining the stability of the oases. Because of the decrease in the amount of water emptying into the basin and because of extraction of ground water, the soil dried out. This led to the decline and destruction of the vegetation over a wide area. In Minqin County, there was originally 630,000 mu of man-made forest of which about 70 percent was narrow-leaved oleaster resistant to dry conditions. However, this is a species of tree with shallow roots that is adapted to growing under conditions of a ground water level of 2 to 3 meters. At present, 44,000 mu of narrow-leaved oleander and willows have died and there are 87,000 mu on which there are withered branches. (See Table 9) In addition, there are varying degrees of decline. The natural white thorn, red willow and aster that surround the oases and that have been succeeding each other for several generations could not obtain sufficient water and because of destruction caused by man about 67.6 percent of the area is in a state of regression. (See Table 10) Sand dunes have also become activ..ced in all areas in which the vegetation has been destroyed. In the light of the conditions of ecological balance in this region, once the original vegetation has been destroyed, recovery will be extremely difficult. If present conditions continue, the consequences will be intolerable.

Table 9. Destruction and Withered Branches Among Man-Made Forests of Narrow-Leaved Oleander and Willows

Destruction		Withered branches	
Area (10,000's of mu)	Number of trees (10,000's of trees)	Area (10,000's of mu)	Number of trees (10,000's of trees)
4.46	215.20	8.73	706.58

Table 10. Changes in White Thorn, Red Willow and Aster in the Peripheries of Minqin Oases

Total area	Preserved area		Area of regression		Area changed to desert	
10,000's of mu	Area (10,000 mu)	Percent of total area	Area (10,000 mu)	Percent of total area	Area (10,000 mu)	Percent of total area
108.63	35.07	32.28	54.57	50.23	18.99	17.49

Note: Cases in which the degree of cover was 0.4 or greater were considered instances of preserved area. Cases in which the degree of cover was 0.3 or less were considered to be instances of area of regression and cases in which the degree of cover was less than 0.1 were considered instances of area changed to desert.

(3) Deterioration in the quality of ground water and decrease in usable water

The terrain of the Minqin Basin is flat without dissection. Movement of the ground water level is very sluggish. It is both deeply buried and shallow and there is intense evaporation. Historically, there has been a problem of accumulation of salt in the ground water. Under conditions in which ground water has been extracted in excessively large amounts and used repeatedly and in which there has been a sharp decrease in the supply of fresh water in the upper reaches, the water has become further concentrated and mineralized. Within the layer of extraction (within 60 meters), the degree of mineralization of the ground water increases at a rate of 0.2 grams/liter each year. In the Hongshaliang zone (which is of about 40 square kilometers) in the central Quanshan region, the degree of mineralization of the ground water has risen from 2.0 grams/liter to 3.0 grams/liter. At present, there is an area of oases of about 331,000 mu, or 35 percent of total area of cultivated land, in which the values for the water are greater than 4 grams/liter. Mineralization of the water has resulted in a decrease in the quantity of usable water in the basin, has aggravated the contradiction between supply and demand and has created a vicious cycle.

(4) Use of highly mineralized water for irrigation, extension of the area of saline-alkaline soil and hardening of the soil

The factors that caused the oases determined the fact that the parent material of the soil would have a comparatively high salt content. Before the 1960's, the ground water level was high. The phreatic water evaporated, leaving an accumulation of salt and bringing about salinization of the soil. Since the 1970's, the drop in the ground water level has been advantageous for removing salt from the body of the soil and there should be some alleviation of salinization. However, because of the water shortage, people have been compelled to use salt water with a degree of mineralization of over 4 grams/liter. Because of the accumulation of salt due to evaporation of the phreatic water, this has caused the salt that has accumulated in the body of the soil to change for the most part into accumulated salt in bodies of soil in which highly mineralized water carries salt residues, with the salinized area progressively expanding. (See Table 11)

Table 11. Changes in the Area of Saline-Alkaline Soil in the Lake Region of Minqin

Area	1958	1963	1978
Area of cultivated land (10,000's of mu)	45.18	42.34	40.22
Area of old saline-alkaline soil (10,000's of mu)	15.81	12.26	19.40
Area of new saline-alkaline soil (10,000's of mu)		6.12	13.7
Proportion of saline-alkaline soil to cultivated land	35	43	82.3

The percentage of the area of saline-alkaline soil in the Lake region of Minqin to the total area of cultivated land increased from 35 percent in 1958 to 82.3 percent in 1978. In the past, the Dongzhen Commune handed over grain to the state; however, in 1979, the state resold 840,000 jin to it.

The Na^+ content in bitter water with a high degree of mineralization is high, and this can cause a colloidal dispersion of the soil, with the result that the pores become stopped up and the permeability is decreased. This in turn can reduce the rate of salt removal during irrigation so that the soil gradually hardens and becomes solid. Lumps of earth are then generally hard to smash using a wooden hammer, and this makes it difficult to process the soil and makes its suitability for cultivation ever poorer.

(5) Effects on the livelihood of the masses

A decrease in the amount of freshwater coming from the upper reaches and drops in the ground water level makes it difficult for people and domestic animals in the Minqin Basin to obtain drinking water. In the past, the masses relied primarily on shallow freshwater water sources. At present, these have been used up and people have been forced to use highly mineralized drinking water. This has had serious effects on the physical and mental health of the people. Today, there are 757,000 people and 376,000 large domestic animals in 98 production brigades of 12 communes in the northern part of the basin for which the problem of drinking water must be solved on an urgent basis.

The Minqin Basin was originally an irrigation region in which surface water was primarily used. It has now changed into an irrigation region based primarily on well irrigation. The original network of canals for supplying surface water has been maintained but the utilization rate is very low. A new well irrigation system has been built. The mode of the wells has been changed three times in 10 years (Yachai Well: inland well → boiler awl well → blast well) and the equipment was changed four times (dual tube waterwheel → diesel engine pump → electric centrifugal pump → phreatic pump). This consumed large amounts of capital of the state and of the collectives. Under present conditions, the costs of irrigation are 2.5-3.0 yuan per mu for planting, 0.5-0.8 yuan per mu for watering seedlings and 6 to 12 yuan per mu for the entire year. The cost per mu for grain production for the county as a whole rose from 3.49 yuan in 1965 to 33.58 yuan in 1979 and the cost per jin rose from 0.0236 yuan in 1965 to 0.093 yuan in 1979. From the standpoint of total agricultural, there was a comparatively large increase. However, because of an increase in expenditures, there was not a change in net income. Because of increase in population, there was a decrease in the daily value of labor so that the actual incomes of the commune members have increased very slowly.

3. Ways To Control and Reverse Deterioration of the Environment

The development and utilization of water resources has led to deterioration of the natural environment. The following aspects should be considered in regard to measures for control and reversal of this deterioration.

1) Active expansion of water and soil conservation work

(1) Safeguarding and establishing water resource forests in the Qilian Mountai

The Qilian Mountains are the region in which the water resources of the Shiyanghe valley are formed. They have an elevation of 2,700 to 4,000 meters. From bottom to top there is a distribution of natural shrubs and woods, grasslands, alpine forests and alpine grassy marshland. They have great significance for the ecological balance between the conserved water resources and the valley as a whole.

A water conservation forest is a natural green reservoir and plays a major role in reducing floodwater pressure on reservoirs, in extending the life of reservoirs and in regulating allocation of annual run-off within the year. Since Liberation, there have been gradual annual increases in the population in the mountainous region, with the population increasing from 90,000 people in the 1950's to 260,000 people today. This had increased the burden on the mountainous region and has led to excessive cutting, with forests being destroyed and wasteland being opened, with the result that about 10 percent of 3.4 million mu of natural forest has suffered varying degrees of damage. Of this amount, 120,000 mu has been severely damaged. There has also been damage of the alm shrub groves. Opening up of grasslands has been particularly prominent, with over 800,000 mu having been opened up over the past 10 years. Destruction of forests and grasslands has led to loss of water and soil erosion and a decrease in the amount of run-off. The measures that are now being taken to safeguard and build water conservation forests are not premature and will also provide a definite basis for the natural ecological environment. The sources of forest cover still exist and the water component of the soil is good so that recovery will be comparatively easy.

(2) Reduction of cultivated land, conversion of fields for grazing and conservation of water and soil in hilly regions

The hilly and mountainous region is situated in the piedmont zone of the Qilian Mountains and has elevations between 2,000 and 2,500 meters. This is a zone in which there is an interlacing of grassland cover and shrub groves. The population in this region accounts for over 20 percent of the population of the valley as a whole. Historically, it has been grazing region. As the population increased, it was gradually converted from grazing land to farm land so that agriculture is now dominant. Because a large area was opened up, there has been severe regression and destruction of the plant cover and severe water and soil erosion. This directly threatens the safety of the reservoirs and the number of years they can be used. Since the Nanying Reservoir in Wuwei County was built in 1969, there has been an accumulation of 4.76 million cubic meters of silt. This amounts to 34.4 percent of the effective capacity of the reservoir. In 1960, the Caojia Lake Reservoir was built in Guliang County and had an effective designed capacity of 5.52 million cubic meters, the dead storage was 50,000 cubic meters. By 1975, the volume of silt accumulation amounted to 1.5 million cubic meters. As a result, it was necessary to readjust the structure and management direction of agriculture and animal husbandry in the region. The area under cultivation was reduced, farm fields were converted to grazing land, hillsides were closed to facilitate the growing of grass and a great effort was made to put water and soil conservation measures into effect. If there is the possibility, consideration can also be given to dispersing the population in order to lessen the pressure on the hilly region.

2) Effecting integrated management and rational utilization of the water resources of the entire valley

The implementation of water control, water management, use of water and allocation of valley water resources on the basis of administrative divisions over the years has not been based on natural laws and economic laws and has created imbalances in the allocation of water resources. In the area of water resource management, only surface water has been managed, while ground water has not been managed. Thus, the amounts of ground water that can be extracted and the amounts that are actually extracted are not clear so that water use has been in a state of anarchy. When ground water has been extracted, no consideration has been given to decrease in the supply of ground water, and when ground water has been exploited, no consideration has been given to its effects on surface water. In the upper and middle reaches, there has been a comparatively high degree of development of irrigation and use of large amounts of water without taking into consideration the consequences of decrease in water resources in the Minqin valley. For this reason, integrated regulations, development and management should be implemented within the sphere of the valley as a whole. If it is possible, a water resources committee for the valley as a whole should be established as soon as possible. Its tasks should be as follows: 1) Ascertain water resources and do a good job of water conservancy planning for the valley as a whole. 2) Get a firm grasp on management, integrate allocation of the amounts of water used in the upper and lower reaches and exercise strict control over the amount of ground water extracted and particularly over the amount of ground water extracted in the middle reaches. 3) Conduct research on measures for controlling and reversing deterioration of the environment in the Minqin Basin in the lower reaches.

The upper and lower reaches of the valley constitute a natural environmental entity. The Minqin oasis in the lower reaches lies along the desert, and as far as Wuwei County is concerned, they are closely related and mutually dependent. If the Minqin oasis is not maintained, the present relative state of stability of agricultural ecology in Wuwei would be destroyed. Therefore, we should give consideration to saving about 40 million cubic meters of the water used in Wuwei County and transferring it into the Minqin Basin in order to maintain the amount of water entering the Minqin Basin at its average level in the 1970's, i.e., 310 million to 320 million cubic meters. This should be combined with readjustment of the cultivated land in the Minqin Basin, decrease in the amount of ground water extracted and control to prevent further deterioration of the ecological environment in the Minqin Basin.

3) Measures for saving on the amount of water use

In terms of the present actual state of water use, there is excess extraction of about 300 million cubic meters of ground water in the valley as a whole each year. For this reason, it is essential to adopt measures for economizing on water use in order to facilitate balance between soil and water.

(1) Regulating the proportions of summer and autumn crops

At present, summer-harvested crops account for about 80 percent of the crops that are planted in the valley. There is a fairly low amount of rainfall from April to June, which is the principal growing period for the summer-harvested crops. Therefore, the water supply is dependent primarily on irrigation, the amount of water required by irrigation being about 360 million cubic meters. However, the average annual water supply is only 227 million cubic meters (which is 62.9 percent of the amount of water required). In a moderately dry year, it is only 172 million cubic meters (which is 47.6 percent of the amount of water required). In spite of the fact that there is water stored in the reservoir, there is still a contradiction between supply and demand. If the proportion of autumn-harvested crops were increased suitably in relation to the comparatively high rainfall in July to September in the valley, this would be definitely effective in decreasing the amount of irrigation water. It would be suitable to control the proportion of summer-harvested crops to about 65 percent.

(2) Extension of an advanced irrigation system

The irrigation quota at present for the valley as a whole is about 800-1,100 meters^3/mu, a comparatively great consumption of water. On the basis of experimental data over a period of several years from the Wuwei and Minqin experimental stations (see Table 12), the wheat irrigation quota has been 400-420 meters^3/mu, with which yields of 700-800 jin per mu can be obtained. On the basis of analyses of the experimental data, there are close relationships between the duration of irrigation, the frequency of irrigation and the amount of water used in irrigation on the one hand and increase in water-saving on the other hand so that there is a comparatively great latent capacity for economizing on water.

Table 12. Experimental Data on Spring Wheat Irrigation in Minqin County

Name of county	Number of irrigations and amounts of water (meters^3/mu						Irrigation quota (meters^3/mu)	Production yield (jin/mu)
	Irrigation with reserve water	1	2	3	4	5		
Wuwei	120	55	60	50	65	70	420	700-800
Minqin	150	50	45	60	59	45	400	800

(3) Reforming irrigation techniques

Irrigation techniques in the valley as a whole are backward, with the area under furrow-channeling irrigation and flood irrigation amounting to more than half the total area under irrigation. Of this, the area under furrow-channeling and flood irrigation in Yongcheng County amounts to 89.4 percent of the total area under irrigation. In Wuwei County, in which there has been improvement in irrigation methods, the border method of irrigation is used in 37 percent of the total area under irrigation (see Table 13). If, in the future, thorough reform is made of the backward methods of furrow-channeling irrigation and flood irrigation and the methods of furrow and border irrigation are extended, then it may be possible to make savings of 20 to 30 percent in water.

The magnitude of the area of the massif and its levelness are also related to the amount of irrigation water. The larger the area of the massif, the greater the frequency of the irrigation per mu (see Table 14). At present, furrow-channelling irrigation of the large massif is generally used to a great extent throughout the entire valley. In the river water irrigation region, most of the massifs that are irrigated are on the order of 2 to 3 mu. If they were suitably reduced in size and leveled, this could also be a way of economizing on water use.

Table 13. Areas of Irrigation in the Shiyanghe Valley Under Different Methods of Irrigation

	Furrow border irrigation		Plot irrigation		Furrowed-channeling irrigation		
Name of county	Area (10,000's of mu)	Percent of total area	Area (10'000's of mu)	Percent of total area	Area (10,000's of mu	Percent of total area	Remarks
Wuwei	51.55	37	43.47	31	44.4	32	
Yongchang	5.8	8.9	1.12	1.7	58.66	89.4	
Guliang	2.7	10.8			16	63.7	Spray irrigation on 64,000 mu, or 25.5 percent of total

Table 14. Relationship Between Amount of Irrigation Water and Massif

Massif area (mu)	10	5	1	0.5
Amount of irrigation water per mu ($meters^3$)	150	130	70-80	50-60

4) Limiting population growth and regulating water throughout the valley

The rapid increase in population has also been a basic factor in creating a crisis in water use and in bringing about changes in the environment. For example, the population in the mountainous region in the 1950's was only 90,000 people, whereas by the 1970's it had increased to 260,000 people. Opening up land for cultivation by destroying forests was an inevitable consequence of this. In the hilly region, the increase in population led to abandonment of grazing for farming. The population in the Minqin oasis has reached 240,000. This has been the cause of the excessive extraction of ground water. For this reason, strict control of the rate of population growth is a long-term strategic measure for controlling changes in the ecological environment.

At present, development and utilization of the water resources as a whole has reached a point of saturation. In order to satisfy the needs of the continuall growing population and to assure stable development of industrial and agricultural production as well as to achieve a basic solution to the problem of environmental deterioration in the Minqin Basin, it will be essential to consider bringing in water from outside valleys, for example, introducing Yellow River water (Jingdian [2529 7193] second stage project) and Qinghai Canal (Yin da-ji xi [1714 1129 3444 6007] project). Good planning work must be done in order to achieve realization as soon as possible.

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ARTICLE EASES FEARS THAT THE CHANG JIANG WILL BECOME AS SILTED AS THE HUANG HE

Beijing DILI ZHISHI [GEOGRAPHICAL KNOWLEDGE] in Chinese, No 5, May 82, pp 3-5

[Article by Zhou Wenhao [0719 2429 3185] and Fan Zhao [5400 2507]: "There Is no Danger That the Chang Jiang Will Become Another Huanghe"]

[Text] For a long time, people along some of the branches in the middle and upper reaches of the Chang Jiang have felled forests at will and reclaimed slopes, causing the destruction of forest resources and the loss of water and soil erosion. This should attract our serious attention. During the past 2 years, some comrades have proposed strengthening water and soil retension in the middle and upper reaches of the Chang Jiang, protecting and expanding forest resources and nurturing the Chang Jiang's water sources, this is correct. But some comrades believe that "there is indeed a danger that the Chang Jiang will become another Huang He," this view is worth discussion. When we say that the Chang Jiang will become another Huang He, we mean that the amount of mud and sand in the Chang Jiang will become as much as in the Huang He while the amount of water will become as little as that in Huang He. Will the Chang Jiang become another Huang He? We can analyze this question by studying the conditions of the river valleys of Chang Jiang and the Huang He and the variation in the amount of sand in the Chang Jiang over the past 30 years.

The Conditions of the River Valleys of the Huang He and the Chang Jiang Are Entirely Different

A river is characterized by the conditions of its river valley. The conditions of the river valley means the geographic, geological, and meteorological conditions within the river valley and the conditions of vegetation and coverage formed by them. Because the conditions of river valleys differ, every river has its own characteristics. The main characteristics of the river valley of the Huang He are: (1) There are wide and continuous expanses of loess in the middle and upper reaches covering an area of 430,000 square kilometers, constituting 60 percent of the area of the middle and upper reaches. This is the fundamental characteristic of the Huang He River Valley. Loess is loose in texture, it contains pulverized sand and loam clay. Agglomeration of granules depends mainly on calcium carbonate which dissolves easily in rainwater. Therefore, loess has a poor ability to resist erosion. (2) Rain is scarce but torrential rains are concentrated. The average annual rainfall in the river valley is less than 400 millimeters and even in the valleys of the branch rivers of Yiluo and Xin He, where there is more rain, the annual amount of rainfall is only 500 to 700 millimeters. The dry climate makes for poor conditions for vegetation in the river valley. But in the Huang He River Valley, especially in the loess plateau regions, rainfall is concentrated, there are torrential rains in July and August, and the amount of rainfall in one or two days can reach 100 to 150 millimeters. The intensity of torrential rains of short duration can reach 200 millimeters. These basic characteristics have caused serious soil erosion in the middle and upper reaches of the Huang He. The modulus of soil erosion in some regions reaches 10,000 tons/square kilometers/year. Serious soil erosion has caused a network of ravines and barren mountain tops to emerge in the loess region. The massive amounts of mud and sand from erosion are carried by torrential rains and flood waters down the slopes into the branches and the trunk river, making the Huang He the world's carrier of silt. Each year, 1.6 billion tons of mud and sand enter the river channels in the lower reaches, and every cubic meter of water contains 40 kilograms of mud and sand, with the highest reaching 911 kilograms. But the volume of water in the Huang He is not great--only 40 billion cubic meters of water a year--and is smaller even than the Min Jiang, which has a river valley only one-thirteenth the area of the Huang He River Valley. The Huang He has less water and more sand. This is the characteristic of the Huang He determined by the conditions of the Huang He River Valley. The abundance of sand the the lesser amount of water in the Huang He did not begin recently. According to historical records, during the Qin and Han periods, and even earlier during the Western Zhou Dynasty and the period of the Warring States, the main area of soil erosion at the middle reaches of the Huang He was almost entirely covered by forests, but at that time, the Huang He had already become a river of a lot of mud and sand. During the Han Dynasty, Zhang Rong defined the Huang He as "a river with turbid water, it can be described as having six dou of mud in one dan of water."

The first characteristic of the Chang Jiang river valley is that it does not have a broad loess region. The areas scattered in the upper reaches with a modulus of soil erosion larger than 1,000 tons/square kilometers/year constitute only 8 percent of the area and they are mostly areas of weathered rocks. Second, rainfall is abundant, the average annual rainfall in most regions is 1,000 to 1,500 millimeters. With a mild climate, plants easily grow in the Chang Jiang River Valley and vegetation is good. These characteristics enable the Chang Jiang to have a lot of water. Each year, the volume of water in the Chang Jiang is almost ten times (Yichang station) or twenty times (Datong station) that in the Huang He. The Chang Jiang does not have a lot of mud and sand. Each year, 540 million tons of mud and sand enters the river channels of the middle and lower reaches (Yichang). Every cubic meter of water contains an average of only 1.17 kilograms of mud and sand. The abundance of water and the lesser amount of sand are the characteristics of the Chang Jiang determined by the conditions of the Chang Jiang River Valley.

Forecasting Changes in the Conditions of the Chang Jiang River Valley

In order for the Chang Jiang to become another Huang He, we must study whether the conditions of the Chang Jiang River Valley will become the same as those of the Huang He River Valley. Obviously, in the foreseeable future, this change will not occur, because:

(1) Geographic and geological conditions will not change. The soil and rock mountain areas are widely distributed in the middle and upper reaches of the Chang Jiang the ground surface is generally covered by a soil layer with a better viscosity. Although some rocks have weathered to varying degrees, obviously it is not possible within a fairly long historical period to change these weathered substances into loess. Therefore, in view of the source of silt, the content of sand in each cubic meter of water of the Chang Jiang will never increase by 40 times to reach the content of sand in the water of the Huang He. If the content of sand in the water of the Chang Jiang at Yichang reaches the same amount as that in the water of the Huang He, then each year, more than 16 billion tons of mud and sand would have to flow into the river. This is difficult to imagine.

(2) Weather conditions will not change. The weather in the Chang Jiang River Valley is like that in other areas of China. It not only is affected by the East Asian atmospheric circulation, it is also closely related to the circulation of the southern hemisphere, mainly the circulation over the southern Indian Ocean, the South Pacific and Australia. Every summer and autumn, the subtropical high pressure over the Pacific and the high pressure over the Indian Ocean intensify. The Chang Jiang River Valley is dominated by the southeast and the southwest monsoon, rainfall increases. In winter and spring, the weather of the Chang Jiang River Valley is dominated by the flow of cold air from the north, it is dry and there is less rain. Although such a pattern of change in atmospheric circulation varies from year to year, there is a cyclic change over a long period, and the annual amounts of rainfall over the Chang Jiang River Valley differ and the weather over a long period undergoes cyclic changes. In the foreseeable future, the weather over the Chang Jiang River Valley will still be dominated by the pattern of atmospheric circulation described above, it will not be easily affected by human activity. Some comrades believe that the reduction in the area of forests in the middle and upper reaches of the Chang Jiang during the past dozen years has caused climatic changes, thus causing changes in the amount of water in the river channel and annual distribution. This may be possible for some small river valleys, but on the whole, there is still no evidence. We analyzed nearly 40 years of hydrological data of the Min Jiang. The area of forests in the Minjiang river valley has drastically reduced, the proportion of coverage dropped from 28 percent to 13 percent. The average annual amount of water during the 1940s at Zipingpu Station was 14.1 billion cubic meters, during the 1950s and 1960s it was 15.1 billion cubic meters, during the 1970s it was 13.7 billion cubic meters. Except for the 1970s, the average annual amount of water did not change much. At this station, the amount of water during the flooding period in the 1940s constituted 77.7 percent of the annual amount; during the 1950s, it constituted 78.4 percent; during the 1960s, it constituted 79.1 percent, and during the 1970s, it

constituted 78.6 percent. The annual variation in the amount of water was not much. This situation also exists in the river valleys of the tributaries of the Minjiang, the Dadu He River Valley, the Heishui He and the Duogunao He. Therefore, we cannot see any effect upon the amount of water and its annual distribution caused by the reduction in the Min Jiang forests. The reduction in the amount of water during the 1970s not only exists in the Min Jiang but also in most of China's rivers such as the Huang He and the Wei He. This is obviously caused by the characteristics of atmospheric circulation during the 1970s, it cannot be explained by changes in forest coverage.

(3) The pattern of plant growth will not change. The weather characteristics of the Chang Jiang River Valley, even in the middle and upper reaches of the Chang Jiang, are very favorable for the growth of plants. Therefore, grass and treees grow well and propagate in the Chang Jiang River Valley. Even in some forest regions, vegetation can recover relatively quickly after trees have been felled. According to field studies by concerned units, after felling forests, it is entirely possible to restore the forest areas within 20 to 30 years by careful nurturing and by artificial methods. Before these forests are restored, some shrubs and weeds can grow very easily. Thirty to sixty percent of vegetation on the ground surface can be restored within a year of felling the forests, and 80 to 90 percent can be restored after 2 to 3 years. This is very favorable to retaining water and soil. Therefore, except for a small area of serious erosion, as long as weather conditions do not change, the Chang Jiang River Valley will not become like the Huang He River Valley with barren mountains.

Trends in the Variation of Mud and Sand in the Mainstream and Tributaries of the Chang Jiang

Whether the amount of mud and sand in the mainstream and tributaries of the Chang Jiang over the past several decades has increased or decreased is a debatable question. We analyzed the average amount of water, the amount of sand transported and the content of sand (i.e., the weight of mud and sand contained in one cubic meter of water) over the years recorded at 48 hydrological stations on the mainstream of the Chang Jiang and 22 tributaries since liberation. As shown in the table, the amount of water in the upper, middle and lower reaches of the mainstream of the Chang Jiang has dropped from that in 1958, but the average amount of sand transported and the content of sand over many years have increased only in 1958-1959 and during the 1960s at the stations below Yichang. In the 1970s, the amount of sand transported and the content of sand increased only at the Luoshan and Hankou stations because Zaiwan on the Jing Jiang reduced its distribution of sand into the Dongtinghu (estimated to be 54 million tons a year), the amount of sand transported and the content of sand at the other stations all dropped from those in 1958. This means, at present, the amount of mud and sand in the mainstream of the Chang Jiang has not increased since 1958. In addition, torrential rains in the river valleys of the Jialing Jiang and the Min Jiang in Sichuan caused damage and brought about the large flood in the middle reaches of the Chang Jiang in 1981 but the annual amount of sand

Statistical Table on the Changes of Water and Sand at the Main Stations Along the Trunk River of the Chang Jiang

Name of River	Name of Station	Increase or decrease % in 1958-59 compared to period before 1958			Increase or decrease % in 1960-69 compared to period before 1958			Increase or decrease % in 1970-78 compared to period before 1958			Increase or decrease % in 1970-78 compared to the 1960s		
		Amount of water	Amount of sand transported	Content of sand	Amount of water	Amount of sand transported	Content of sand	Amount of water	Amount of sand transported	Content of sand	Amount of water	Amount of sand transported	Content of sand
Jinsha Jiang	Pingshan	-25.3	-20.5	+ 6.3	-8.3	-13.7	- 5.8	-18.9	-22.5	- 4.0	-11.6	-10.1	+ 1.8
Chang Jiang	Zhujiatuo	-10.1	-10.3	- 0.9	+5.7	+ 7.8	+ 1.8	- 6.7	-14.4	- 8.5	-11.8	-20.6	-10.1
	Cuntan	-15.3	-18.5	- 4.1	-0.6	-12.8	-12.1	- 5.7	-27.0	-22.8	- 5.2	-16.3	-12.2
	Yichang	-14.6	+ 8.8	+28.3	-0.7	+12.9	+14.2	- 9.3	- 3.9	+ 6.6	- 8.7	-14.9	- 6.6
	Luoshan	-14.3	+15.8	+30.9	-5.7	+22.1	+24.3	- 9.0	+28.7	+37.0	+ 3.5	- 5.4	+10.3
	Hankou	-15.0	+17.0	+38.0	-5.1	+24.1	+30.4	- 8.3	+ 9.0	+18.6	- 3.4	-12.2	- 9.1
	Datong	-15.2	+ 3.6	+16.4	-9.1	+ 8.8	+13.7	-10.4	-10.0	- 4.3	- 1.5	-17.3	-15.9

transported and the average content of sand at the Yichang Station did not surpass the levels of 1958-1959.

The amount of sand transported and the content of sand increased in the eight tributaries of the Min Jiang, Jialing Jiang, Xiang Jiang and its branches Liulai Shui, Die Shui, the middle and upper reaches of the Hanjiang, the lower reaches of the Ganjiang in 1958-1959 compared to the period before 1958. The amounts increased the most in the Minjiang and the middle and upper reaches of the Jialingjiang. For example, the amount of sand transported and the content of sand at the Pengshan Station on the Minjiang increased 280 percent and 240 percent respectively. During the 1960s, the amount of sand transported and the content of sand increased in the Yalong Jiang, Min Jiang, the middle and upper reaches of the Jialing Jiang, Tuo Jiang, Pei Jiang, Xiang Jiang and its branches, the Liulai Shui, Die Shui, and the lower reaches of the Gan Jiang, totalling 9 branch rivers. The amounts in the Min Jiang and Jialing Jiang increased more. The amount of sand transported and the content of sand at Pengshan Station respectively increased by more than 150 percent. During the 1970s, the amount of sand transported and the content of sand increased, in the six branches rivers of the Min Jiang, the upper reaches of the Tuo Jiang, Wu Jiang, Xiang Jiang and Xin Jiang. The increases were the most obvious in the Wu Jiang. The amount of sand transported and the content of sand all increased by more than 10 to 20 percent in the upper, middle and lower reaches.

It can be seen from this that the change in the amount of mud and sand during each period in each of the tributaries is different, increases in mud and sand occurs only in some tributaries.

Currently, the debate over changes in the amount of mud and sand over the past several decades in the Chang Jiang is mainly due to the difference in the data upon which the arguments are based and the comparative standards used. For example, in the use of data, some used hydrological data of very poor precision compiled before liberation because of insufficient information, some used data compiled by hydrological control stations and the amount of information was too scarce. In the use of comparative standards, some arguments used the total annual amount of sand transported by the river while some arguments used the amount of sand in one cubic meter of water (content of sand). We believe that if the data used and the method of comparison are unified, then such divergent arguments are easy to reconcile.

For actual conditions in the Chang Jiang River Valley, we must appropriately estimate the production of sand by forests when estimating changes in the amount of mud and sand. On the one hand we must realize that the effect of destruction of forests upon the mainstream and the tributaries is obvious. Changes in the average amount of sand transported and the content of sand in such tributaries as the Min Jiang and Jialing Jiang which we discussed above can explain this point. In addition, the relationship between the actually measured amounts of flow and the content of sand at some hydrological stations on the Min Jiang shows that with the same amount of flow, the content of sand in 1959 can be several dozen times greater than that measured from 1955 to 1957. This shows that soil erosion had greatly worsened in 1959 after the devastating destruction of forests in 1958 and 1959. Therefore, the uncontrolled felling of forests which still exist up to now in some regions must be strictly prohibited. But, it can also be seen from the above discussion that the effect of such human activity as the destruction of forests along the tributaries on the amount of mud and sand is limited to the tributaries themselves, and the effect upon the mainstream is not visible. The main reasons are the following:

(1) The mud and sand in the tributaries are coarse, the distance over which they can be carried is short, most deposit or silt along the way. Therefore, the ratio of input and output of mud and sand in each of the tributaries of the Chang Jiang River Valley (the ratio between the amount of sand carried out by the river and the amount of sand entering the river from the river valley) is smaller than 1:1. The mud and sand from erosion in tributaries can all enter the mainstream of the Huang He.

(2) The amount of mud and sand in the tributaries is smaller than that in the mainstream. The increase in the amount of mud and sand as a percentage of the amount of mud and sand in the mainstream is even smaller, therefore it is not easily detected. For example, the average amount of sand transported during the 1960s at the Wusheng Station on the Jialing Jiang has increased 54 percent since 1958 but constitutes only 6 percent of the average amount of sand transported in the mainstream at Yichang Station during the same period.

(3) The mainstream and the tributaries will not simultaneously surge, the mainstream and the tributaries can mutually dilute the mud and sand in them.

(4) The function of reservoirs in blocking sand. We made some estimates from data of the annual average amount of sand blocked by some large, medium and small reservoirs in the Chang Jiang River Valley, the United States and Japan. The results show that because of the effect of blocking sand by the various types of reservoirs at the upper reaches of the Chang Jiang, the amount of mud and sand prevented from entering the mainstream of the Chang Jiang constituted about 6 percent of the average amount of sand transported during the 1970s at Yichang Station.

Finally, we should explain that we believe there is no danger that the Chang Jiang will become another Huang He based on the conditions of the entire river valley of the Chang Jiang. This does not mean that problems of mud and sand do not exist in individual tributaries or local regions. Conversely, local problems of mud and sand such as silting in river channels and reservoirs, blocking of lakes, inland seas and navigational channels not only exist, they have worsened in recent years as a result of such human activity as uncontrolled felling of forests and they have affected safety in flood prevention, the useful life of hydraulic projects, transportation and shipping. Therefore, actively doing the work well in retaining water and soil in the Chang Jiang River Valley is extremely important.

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PROTECTION AND MANAGEMENT OF THE GUANTING RIVER SYSTEM

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 4, 1982, pp 8-10

[Article by Liu Yansheng [0491 3601 3932]: "Managing Environmental Protection of the Water Sources of the Guanting River System"]

[Text] The work of protecting the water sources of the Guanting river system began in 1972, at that time, it was discovered that the reservoir was polluted. After approval by the State Council, a leadership group to protect the water sources was established, a great deal of work was done to organize and mobilize strength from various sectors. Within a few years, pollution was controlled, the water quality improved and various water quality indicators basically satisfied the criteria established by the state. The management work was an important part of protecting the water sources of the Guanting river system. They mainly involved the following:

I. Managing the Sources of Pollution

Beginning in 1972, surveys of the sources of industrial pollution were conducted and plans made to control them. Seventy-seven construction projects were carried out to tackle major sources of pollution. The amount of industrial waste water and pollutants was reduced, thereby reducing the major pollutants in rivers and reservoirs. On this basis, each of the major sources of industrial pollution also established a management system to prevent pollution. Some factories established specific regulations in each shop and each work section to strengthen the management of waste water, including strict operation, efforts to stop accidental discharge of pollutants, efforts to strengthen monitoring and inspection of polluted water, efforts to separate the flow of polluted and clean water, efforts to reduce the consumption of water in production, efforts to keep the treatment facility operating normally and to maintain a better treatment results, and control the release of waste water.

The water source protection department strictly monitored and inspected the polluting sources. In 1980, local environmental protection departments along the Guanting river system began to implement a fee system for polluting the water, this is an effective method to control the polluting sources today.

According to the environmental protection law and state regulations, the environmental impact of newly built enterprises and expanding enterprises must first be evaluated. There must be treatment facilities for waste water, waste gas and waste slag; furthermore, the design, construction and operation must be done simultaneously. The environmental protection agencies at each level in charge of protecting the water sources of the Guanting river system insisted on the "three simultaneous efforts," evaluation and management, thus they guaranteed that new sources of pollution and damage would not be created.

The management of polluting sources mentioned above is the management work established during the initial stage of protecting the water sources of the Guanting river system. Because such management was established simply on the one factor of the polluting source, it generally did not involve analysis of quantitative relations when considering such factors as the actual function and effect of the polluting sources upon the body of water and the ability of nature to purify the pollutants. Therefore, simple implementation of such management is not closely related to the improvement of water quality of the body of water. Such a situation may occur in which a certain polluting source is relatively far away from the body of water and the pollutants released into the natural environment are easily purified by the natural environment, the actual effect upon the water quality of the body of water is not necessarily very great, but because of a lack of quantitative research, relying only on the soft-handed method of inference in management frequently will require the investment of too many managerial forces, and thus manpower, materials and funds are scattered and a definite degree of waste is created.

II. Water Quality Management of the River Channel

Water quality management of the river channel is a measure to consider the self-purifying ability of the river channel and the possible load of pollutants the river is capable of bearing on the basis of the present water quality level, to improve the quality of the body of water and to maintain a certain water quality level.

To improve the quality of the body of water, we must first find the key to improving the quality by analyzing the water quality of the river; at the same time, we must investigate and calculate the river's natural purification of these pollutants and the possible load of the river to achieve a certain water quality. We must utilize mathematical models to calculate and derive the requirements for releasing pollutants by the polluting source, i.e., concrete regional standards for the release of pollutants. In actual work, several different plans may be proposed. These must be analyzed according to their economic gains and finally the plan that is feasible and that is more satisfactory should be selected. This work is called water quality planning. According to water quality plans, each polluting source should treat and control the release of the pollutants. This means that the polluting sources are to be managed. We call this water quality management of the river channel or water quality planning and management of the river channel.

Because the planning and management of water quality begins with the goal of improving the water quality of the river channel, use scientific calculations and manage the polluting sources with a goal and with an aim, therefore, theoretically, the connection between management of the polluting source and improvement of water quality of the river channel is close. The forces can be more centrally utilized, and the limited manpower, materials and finances can develop their maximum gain in protecting the water sources. It is more scientific than the management based on the simple viewpoint of controlling the polluting source. The Guanting river system began conducting test point type research in water quality planning and management in the Yanghe-Xuanhua section in 1980 on the basis of the original efforts to manage the polluting sources. Planning has been completed and implementation of water quality management is being organized.

III. Zonal Management in Protecting Water Sources

The environmental and socio-economic conditions of different river sections of a river system are different. Thus the goal and measures to protect water sources should not be the same. Therefore, we must mark out several different zones for protecting water resources according to the location of different river sections and the different environmental and socio-economic conditions. The key content of the work of protecting the water sources in each zone must be clear. Various types of management measures to protect the water source should be proposed and they should be aimed at the different concrete situations in each zone. The Guanting river system can be divided into three zones to protect the water source: Guanting Reservoir and its surrounding areas (including Shacheng in Hebei and Yanqing in Beijing) are first level protection zones. Relatively large polluting sources are not allowed within this zone based mainly on the water quality requirements of the reservoir. For sections of the large and small rivers that flow directly into the reservoir, a higher water quality standard must be maintained. Also, a safety coefficient must be established according to the reservoir's ability to purify itself naturally. Only in this way can we guarantee that the reservoir is not polluted. The major towns and cities at the upper reaches of the Guanting Reservoir and regions with a concentrated distribution of polluting sources are zoned as the second level protection zone. This zone mainly includes such towns and cities as Xuanhua, Xiahuayuan, Zhangjiakou and Datong along the river. This zone serves mainly to control the release of pollutants to gradually improve the water quality of each of the river sections of the upper reaches. The third level zone is the broad area outside the towns and cities of the upper reaches. This zone mainly serves to control pollution by agricultural chemicals and natural polluting sources. Because the Guanting river system is located in a region of hilly loess mountain land, this zone also serves the function of preserving water sources, retaining soil and water and purifying a part of the water sources.

IV. Comprehensive Management of the Environment of the River Valley

The body of water of a river system is not isolated and closed. Its water quality is closely related to the natural environment of the river valley and human activity. For example, in the relationship between water quality and quantity, the distribution and allocation of quantities of water involve the natural environment and the allocation of water for human use. To develop production and to develop the resources in the river valley where a river system is located, irrational arrangement of production and irrational development of resources will not only cause destruction of the natural environment, they will also cause pollution of the water source. Therefore, we must combine the protection of the entire natural environment in efforts to protect the water source. In addition, utilizing the laws of nature between the water source and other environmental conditions, treating the balance between the water source and the natural environment well, fully utilizing the capabilities of the natural environment to purify the pollutants in the water source are all beneficial to protecting the water source. We should fully utilize these in our work to protect and manage the water source. It can be seen that as the work of protecting the water source deepens, we must implement comprehensive management of the natural environment of the whole river valley and socio-economic activities before we can guarantee the water quality of the water source and before the water source can be fully and rationally utilized. To implement environmental management of the river valley, we must first comprehensively evaluate the natural resources and the environment of the entire river valley and combine the evaluation with the economic development of the river valley to produce an environmental plan that will protect the environment, fully utilize resources and develop the economy. Then, we can implement measures corresponding to the plan to carry out comprehensive management of the environment (including water sources). This work is relatively complex and it cannot be completed alone by water source protection departments. At present, such comprehensive management has not been implemented in the Guanting river system and valley, but as the work to protect the water source continues to deepen, and as the national economy continues to develop, this type of management will be a necessity. We hope that concerned leading departments can include this aspect of work in the daily agenda as soon as possible.

In addition, in management work to protect water sources, we should also gradually introduce such means of modern science and technology as automated monitoring and management methods to improve the standard of management so that the work of protecting the water source can join the ranks of modernization as early as possible.

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STUDIES FOCUS ON REDUCING DISCHARGE OF POLLUTANTS INTO ESTUARIES

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese No 3, 30 Jun 82 pp 67-70

[Article by Wu Yuduan [0702 3842 4551] of Xiamen University]

[Excerpts] Investigation on the Ways of Discharge

On the basis of the chemical characteristic of the estuarial and coastal waters of China, the following two forms of waste discharge are proposed for further investigation and study:

(1) The Chang Jiang and the Huang He rivers of China are world famous turbid water systems, the turbidity of the waters entering the sea from these rivers is very high. On the basis of this characteristic, the method of discharging separately sewage and industrial wastewater may be adopted. Sewage may be discharged first to allow the humus content of the sewage to react fully with the mixture of granular materials in suspension in the water to produce a layer of organic film covering the surface of the solids before the industrial wastewater is discharged. The heavy metal contents of the industrial wastewater will promote the formation of the organic film and the existence of this membrane will further accelerate the process of organic complexing reaction of metals. This method is favorable for the heavy metals to be fixed by the clay minerals and to sink into the bottom of the sea. When FA/HA $\ll$ 1 in sewage, the harmful metals will flocculate and settle in areas near the estuary (cl%o $\approx$ 10) at the same time, the hydration rate of the sediments is low and the physical property is relatively good. When FA/HA $\gg$ 1, the harmful metals precipitate in the distant ocean (Cl%o $>$ 15) where the hydration rate of precipitants is high, the floating capacity is great; therefore, they are moved to farther distances.

If, on the contrary, industrial wastewater is discharged first before discharging sewage, when the ratio of FA/HA in the wastewater is relatively high, it will be possible for the harmful metals fixed on the surface of the suspended granular materials to be dissolved and detached once again to enter the body of the water for the second time to increase its load of metal compounds.

(2) Controlling the FA/HA $\gg$ 1 in sewage in the discharge by mixing the sewage and the industrial wastewater according to the quantitative ratio of

chemistry so that the FA in the sewage and the heavy metals produce soluble organic metal complexes having a high and stable rate of transfer and being harmless to living things before discharging the mixture into the estuary during ebb tide to cause it to flow with the tide into the ocean is the other method [proposed in the paper.] Or the mixture, under the action of high salinity, will flocculate and precipitate into the bottom of the sea. When the $FA/HA \ll 1$ in the sewage, the mixture of sewage of daily living and industrial wastewater may be discharged in the estuarial sea where the turbidity is high and the organic metal complexes of high molecular weight will quickly adhere to clay minerals to precipitate together and be buried in the bottom of the sea.

In a word, the form of discharge should be determined according to the environmental conditions, the degree of wastewater treatment, and the specific characteristics of the industrial wastewater for the purpose of preventing changes of the benthic environmental condition (such as the state of oxidation reduction, the growth and propagation of microorganisms and benthonic living things, the chemical condition of the benthic water, etc) to induce the possibility of re-suspension of the precipitants and the heavy metal contents of the precipitants to be re-released to create secondary pollution of the water body. Of the two forms of discharge, the second form should be better.

The above suggestions will be further experimented in the following two designs:

(1) A laboratory model of the estuarial water body is to be established to determine the heavy metal transfer effect under the condition of coexistence of clay minerals, FA, HA. Experiments have proved that the FA in the water body is basically not adhered to the clay minerals while the HA is obviously concentrated on the surface of the clay minerals. Results of orthogonal design experiments indicate that the existence of HA improves the ability of clay minerals to fix heavy metals. Thus, the existence of FA is favorable for the diffusion and transfer of heavy metals in the water body; the existence of HA accelerates the precipitation of heavy metals toward the bottom of the sea.

(2) At the sewage treatment plant of a certain city, the sewage treated with mud of various degrees of activity is mixed with turbid water of the river in different ratios before proceeding with model experiments of the hypotheses suggested in this paper. This portion of the work is still in the process of being prepared.

6248
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WATER SHORTAGE SPURS EFFORTS TO REDUCE INDUSTRIAL POLLUTION

Guangzhou HUANJING [ENVIRONMENT] in Chinese, No 6, Jun 82, p 3

[Article by Jin Jianming [6855 7003 2494]: "Water Resources Facing a Crisis"]

[Excerpt] The world's water resources are facing a crisis and China is no exception. According to population averages, China is not rich in water resources. With the uneven distribution of water between regions, the uneven distribution of monthly rainfall and runoff, the large variation between years, the drastic increase in the use of water in production and in life, the conflicts for the use of water are worsening.

To solve China's problems in water resources, the first is to change the out-dated concept that water "is inexhaustible," to establish an understanding of water from the ecological viewpoint and the economic viewpoint, and to truly regard water as a "precious resource." From the higher authorities to the lower echelons, every profession must propagandize the important meaning of protecting and treasuring water resources, and everyone must conserve and rationally use water.

Developing and conserving sources are important ways to solve the problem of water resources. Developing sources means rationally and fully utilizing water resources of the locality. Last year, to assure the supply of water for Beijing, the supply of water by the Miyun Reservoir to Tianjin was reduced and the water of the Huang He was brought in from Henan and Shandong to solve the shortage of water in Tianjin. This is a good example. Conserving sources mainly involves reducing the amount of water used by industry and agriculture. One source of water should serve many purposes, the rate of recycled use of currently available water resources, the rate of re-utilization and the rate of using returned water should be improved. The wasting of water in China is shocking. Foreign nations use only 20 tons of water to produce one ton of paper, China uses 200 to 700 tons. Foreign nations use 0.3 to 1.2 tons of water to refine one ton of oil, China uses 2 to 32 tons. It is obvious that the potential to conserve sources via technical improvements and by raising the level of management is very great. To achieve the purpose of conserving water, Shanghai has implemented economic incentives to encourage factories to comply. Units that use more than the specified amount of water must pay two to five times the fee. Beijing has also drawn up six measures to utilize and protect water resources.

Preventing pollution is an important aspect in solving the problems of water resources. Now, in many regions of China, the problem is not that there is no water, the problem is that the water sources are polluted and available water cannot be used. Cities and towns near certain rivers and lakes frequently cannot use the water for drinking because the rivers and lakes are polluted. In recent years, some areas by emphasizing environmental management work, extending regional comprehensive management and implementing measures to collect fees for releasing pollutants, have realized visible results in stimulating the treatment of various kinds of industrial waste water and have eased the shortage of water at the localities to a great extent.

9296
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RADIOACTIVITY IN SPRING WATER FORCES OFFICIALS TO ISSUE HEALTH WARNING

Guangzhou HUANJING [ENVIRONMENT] in Chinese, No 6, Jun 82, p 6

[Article by Zhong Bingnan [6945 3521 0589] and Chen Xiuxiong [7115 4423 7160] of the Guangdong Provincial Testing and Analysis Research Institute: "Beware of Radioactivity in Mineral Water"]

[Text] A certain region has two small mountain villages, an east and a west village, although both villages have green mountains and clear water, their fates have been very different. The people in the east village drink the mountain spring water on the east side, the population is flourishing. People in the west village drink the mountain spring water on the west side but there are few offspring. Therefore, people say that "the land of the east village is good; the land of the west village is evil." "Drinking the water in the east village gives people long life, drinking the water in the west village leaves people with no offspring." Why? The state geological team sampled and analyzed the mountain spring water of the east and west village. They discovered a high content of such radioactive elements as uranium, radium and radon in the water of the west village. Later, they followed the clues and discovered a large uranium deposit in the area of the west village. The mountain spring water of the west village flowed from the crevasses of this rich mineral layer. Sterility, miscarriage and dead fetuses were caused by chronic radiation sickness, no wonder the west village almost became extinct.

We must be aware that mineral spring water containing radioactive substances frequently cannot be detected by sight and taste. Because this type of water is like clean mountain spring water, it is very clear, it does not have a strange taste, and its content of radioactivity can be measured only by instruments. Currently, foreign nations and China are paying a lot of attention to pollution of mineral spring water for drinking by radioactive substances. According to investigation, the content of radioactivity in mineral spring water in China and abroad is slightly high. In general, the concentration is between 10^{-11} and 10^{-8} curie/liter, 40,000 times higher than the healthy standard of 1×10^{-12} curie/liter established by the European Health Organization. If we drink such mineral spring water, how can it not affect our health?! Therefore, when drinking mineral spring water, we must ask concerned departments to conduct strict analysis and measurements so that we will know when to stop drinking such water.

Why does drinking spring water with a high content of radioactive elements affect our health? Because after radioactive elements enter the human body, they will emit α, β, γ rays and irradiate the internal organs of the human body. In particular, the ionization of α particles is very strong. It can directly destroy cells and cause a radiation disease that can affect the ability of the human body to produce red blood cells. The main symptoms of the patient are physical weakness, fatigue, loss of hair and a drop in the count of white blood cells.

To protect people's physical health, the fundamental measure to prevent internal irradiation by radioactivity is to lessen the amount of radioactive substances from entering the body as much as possible. In particular, residents in the granite regions of Nanling must be very careful when drinking local well water and spring water. The water must be strictly tested, wells with water that is seriously polluted must be firmly closed. In addition, we can take corresponding measures according to the characteristics of radioactivity to reduce the content of radon in the water; because radon is a gas, mixing the water for 15 minutes can allow half of the radon to escape. After the water has been boiled, most of the radon gas will escape. Because the half life of radon is 3.825 days, and the half life of the last 3 or 4 radon particles is also strong, another way is to extend the time of keeping the water so that the radon gas will attenuate. If the water is kept for one day, radioactivity of such elements as radon will lessen nearly one half. There is another important aspect, we must strictly prohibit factories and mines that produce radioactive substances to release at will radioactive waste liquids, waste slag and waste gases that surpass the health standards.

Yet, all types of water in nature contain a small amount of radioactive substance, therefore, absolutely preventing radioactivity from entering the human body is not possible. Actually, the human body itself also contains radioactive substances, there is no need for fear. Radioactivity will destroy the cells in the human body, but the human body has a definite ability to repair damage due to small amounts of radiation. Man has evolved over several million years, and he has gradually adapted to a low level of radioactivity and has achieved a relative balance. Only when this balance in radiation has been destroyed, when quantitative change has become qualitative change, will human health be affected. To avoid unfortunate accidents, it is necessary to learn about radioactive substances.

9296
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SHANGHAI HUANGPU RIVER POLLUTION PROJECT TO BEGIN

OW041328 Beijing XINHUA in English 1226 GMT 4 Sep 82

[Text] Shanghai, 4 September (XINHUA)--A 3,000 million-yuan project will soon be implemented here to treat pollution in the Huangpu River, the main source of water for drinking, industrial and agricultural use in this biggest urban center of China.

Shanghai depends on the Huangpu River, a tributary of the Yangtze, for drinking water for its six million people in the city proper, and the river also supplies the needs of 8,000 factories and irrigates more than 353,000 hectares of farmland on the outskirts of the city.

As the first step, according to a plan worked out at a meeting jointly held by the State Economic Commission and the Ministry of Urban and Rural Construction and Environmental Protection, efforts will be concentrated on improving the quality of drinking water from now until 1985 by building pipelines to divert water from the upper section of the Huangpu River to the city's waterworks. That section is much cleaner, according to municipal authorities.

Until now, drinking water has had to be obtained mainly from the lower section of the river, where more than 100 large industrial enterprises are also located. At present, authorities said, approximately five million tons of industrial sewage are discharged into the river every day.

Beginning from 1986, work will be concentrated on treating pollution in the lower section of the 82.5-kilometer Huangpu River running through the city, until the water is clean enough to sustain fish. The entire process is scheduled for completion by the end of the century.

The plan, which was worked out at the meeting of experts from 29 to 31 August, also calls for improving the quality of water in some tributaries of the Huangpu River.

The meeting urged factories along the Huangpu River to help in the project by redoubling their efforts to treat their own sewage, waste gases and materials.

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MANY REGIONS LACK DATA TO SUPPORT EFFECTIVE ENVIRONMENTAL IMPACT STUDIES

Beijing RENMIN RIBAO in Chinese 29 Jul 82 p 3

[Article by Chen Jingsheng (7115 7234 3932) and Wang Dengsan (3769 4098 0005): "Seriously Implement the System of Evaluation of Environmental Impact"]

[Text] Evaluation of environmental impact refers to carrying out thorough research and forecasts on the basis of the principles of ecology on what adverse effects there might be on the environment in developing any natural resource or in constructing any large project before carrying them out in order to prevent destruction of natural resources and deterioration of the quality of the environment. Through evaluation, we can select the most suitable method of development or construction and not permit projects that would have unfavorable effects on environmental protection measures to be carried out. Some countries have codified this working method in the form of law so that it has become a regulation that must be observed. This is a system of evaluation of environmental impact.

This system has recently been incorporated into the environmental protection law of China. The "environmental protection management method for capital construction projects" that has been promulgated in this country includes concrete stipulations in regard to the scope of evaluation of environmental impact and to the content of environmental impact reports. However, in actual work, there are some regions in which the system has not been implemented with sufficient seriousness. One major cause of this is that the work of evaluation of enviornmental impact has grown at a generally slow rate which is not in conformance with the rate at which the items initiated in the nation's economic plans have been completed. In order to change this situation, we propose the following:

1. Intensification of basic research work relevant to evaluation of environmental impact.

At present, there are many regions in which there is a lack of detailed data on environmental background conditions, there is little basic research relating to evaluation of environmental impact, the specialized technical corps for evaluation of environmental impact are very weak and organizational structure are inadequate. After an evaluation assignment has been made, a group must often have to be put together on a temporary basis and start from scratch, this inevitably affects the speed and quality of evaluation. Under these conditions, it is sometimes necessary to spend two or three years to complete an environmental impact evaluation assignment in a fairly satisfactory way. Because too much time is spent, units responsible for construction projects often cannot wait, as a result they are not willing to observe the procedures and measures for the construction project on the environmental impact evaluation. In order to change this situation, we must devote a great effort to intensifying basic research work relevant to environmental impact evaluation. In this matter, there are a number of experiences of other countries that we can use for reference. For example, many countries have conducted basic individual environmental impact research in different categories including research on typical fuels, raw materials, typical technological processes and typical engineering projects (such as irrigation works and road and harbor construction) and typical land uses (such as use for grazing land, forest development and urban-rural planning). As a result, there has been an accumulation in the relevant literature of various types of typical technical data and economic data that environmental impact evaluation workers can use. Thus, when an environmental impact evaluation is to be undertaken, the basic work does not have to be started from scratch, the time required for environmental impact evaluation can be greatly shortened.

2. We should revise the procedures for examination and approval of construction projects.

In determining a construction project at present, a planning and job report is first submitted to higher authorities by the concerned enterprise or institution and the environmental impact evaluation can only be made after it has been approved by the higher level planning department. As a result, environmental impact evaluation work often cannot be done adequately and is sometimes done only as a formality because of the press for time. On the basis of experiences both in this country and other countries, we propose that a clear stipulation be made to the effect that each unit submit an environmental impact report to the higher authorities at the same time that the construction project planning and job report is submitted as a reference for determining whether or not to approve the project. Therefore, an environmental impact report should be made first when plans are being drawn up to develop and utilize natural resources or when preparations are being made for a major project. The higher level department should formally make known its investment only after having passed the environmental impact report. It is only in this way that the project construction procedures of the environmental impact report can effectively play its part in protecting the environment and in protecting our land resources.

3. We propose that the Party and the state make environmental impact evaluations in regard to policies when major political and economic policies that could have marked effects on the environment are being formulated. In this way, it can be assured that great political and economic benefits will be obtained, at the same time, it will be possible to predict what detrimental effects will be produced on the environment in certain regions and under certain conditions so that appropriate countermeasures can be formulated as soon as possible.

10019
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RELATIONSHIP BETWEEN ENVIRONMENTAL PROTECTION, ECONOMIC RESPONSIBILITY SYSTEM DISCUSSED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 6, Jun 82 pp 6-8

[Article by Zhao Zongliu [6392 4844 3177] and Zhuang Ronghua [8369 2837 5478]: "How To Implement an Economic Responsibility System in Environmental Protection"]

[Text] I. The Method of Implementing an Economic Responsibility System in Environmental Protection

(1) Principles. An economic responsibility system in environmental protection is a component of the economic responsibility system. Therefore, it must follow the basic principles of the economic responsibility system. The economic responsibility system must correctly handle the relationship among the state, the enterprises and the workers, generally, it should follow four fundamental principles: First, it must guarantee the overall completion of state plans, it must be beneficial to improving economic gains and environmental results, it cannot guarantee only profit. Second, the cooperative relationship of all departments within the enterprise must be included in the economic responsibility at each level and must be connected with economic benefits to guarantee that the ultimate economic effectiveness of the enterprise is increased. Third, the relationship of the benefits of the state, the enterprise and the individual must be correctly handled. Enterprises can retain more and the individual can receive more only under the prerequisite that the state receive more revenue. Fourth, the economic responsibility system must be implemented down to the individual, arouse everyone's enthusiasm and promote the continued improvement of administration and management. The more the economic responsibility system in environmental protection can fully realize the principles described above, the more effective role it can play.

(2) Substance. The content of the economic responsibility system includes two parts. One is the requirements of state plans, the second is the various requirements of administration and management of the enterprises. The former is being responsible to the state and to contract work offered by the state, it is the basic content. The latter is to better complete state plans and to increase economic gain, it is work assigned within the enterprise to the shops and scientific offices. The Capital Steel Mill divided economic responsibility into three parts: The first was to guarantee profits, guarantee increased benefits, guarantee a fixed number of workers. The second was to guarantee production, quality, variety, contracts, cost, operating capital, physical and equipment safety, environmental protection, test manufacturing of new products,

scientific research tasks, rationalization of productive organization and rationalization of administration and management. The third was to guarantee cooperation in work, mainly the first work procedure guaranteeing the work of the next procedure, the departments and offices guaranteeing the plant and the mines, mutual guarantees among the plants, mines departments and offices.

Now, enterprises that have launched the economic responsibility system [illegible] not follow the same methods in each locality. Capital Steel Mill included environmental protection as one of the guaranteed tasks, its indices for evaluation constituted 5 to 10 percent of those of the plants and mines. Some regional enterprises have established rules that if the indices for evaluation of environmental protection cannot be completed, over 20 percent of the total monthly amount of cash rewards for the shop will be withheld. Some have ruled that the rewards be deducted completely and no rewards be paid; some deducted 1 to 10 percent of the rewards for profits of shops kept by the shop itself. Some established the percentage points taken up by environmental protection according to the amount of pollution by the shop. Generally the percentage for environmental protection is 10 to 30 percentage points and some reach 40 points. Which form is the best is determined by the situation of the enterprise; the percentage of the indices for evaluating environmental protection is determined by the amount of environmental pollution by the enterprise and the load of work.

(3) Steps. The first step is to let the enterprise separately assign economic responsibilities of the two different natures described above to the basic level units and the service departments to complete the goals of state plans and the goals of management established by the enterprise itself. Their economic responsibility and their method of evaluation are separately established. The goals to increase benefits and profits serve as a basis for synthesis, at the same time establish conditions for awarding or deducting points separately for the goals to be guaranteed and the requirements for cooperation. Such guarantees bring out economic results and also prevent purely pursuing profits and independent development.

The economic resonsibility of the service departments of an enterprise is to guarantee profit goals, professional goals and work requirement, service to the basic levels and the cooperative relationship. For example, the environmental protection department of the Capital Steel Mill has two guarantees, one is to guarantee company profit and the other is to guarantee a work force of 51 persons. There are 64 projects that are guaranteed. Among them, the main one is to guarantee a fund of 4.8 million yuan of the profit from the comprehensive utilization of the "three wastes," to guarantee 43 goals for the release of smoke, dust and sewage of each plant and mine, to guarantee that the six major pollutants in the waste water released at the general release gate of the company meet the goals, to guarantee that the qualified percentage of dust from the chimneys taller than 30 meters used in the production process at the plant surpasses or reaches 74 percent, to guarantee that the rate of retrieval and utilization of solid waste reaches 90 percent, to guarantee that major incidents of pollution are eradicated, to guarantee that new polluting sources are controlled 100 percent to implement "the three simultaneous efforts," to guarantee that funds for environmental protection and treatment are not overspent, and to guarantee that the plans are economical, rational and effective, etc. Six cooperative relations must also be guaranteed, mainly by providing necessary information and data on the environment to the factory and the department.

The second step is to let the basic levels and the service departments of the enterprise divide and strengthen the economic responsibility they have, and assign the responsibility to each subordinate level until it is assigned to every worker. For example, the power plant of the Capital Steel Mill divided and strengthened the five goals of the task of guaranteeing environmental protection and assigned them to the four scientific laboratories of the plant (planning department, technical department, dispatching room, motor department) and the six shops (water treatment shop, the first heat treatment shop and the second heat treatment shop, the fuel shop, the electrical tools shops, the mobile repair shop). The technical department implemented six guarantees, i.e., guaranteeing environmental protection projects, guaranteeing that construction costs will not surpass estimates, guaranteeing that environmental protection projects will realize expected results after operation begins, guaranteeing that the rate of recycled sewage of the blast furnace is greater than 94 percent, guaranteeing that the amount of suspended substances in the overflowing water from the ϕ30M sedimentation pool does not surpass 100 milligrams/liter, guaranteeing that the concentration of dust released by the electric vacuum of the fifth boiler room is smaller than 200 milligrams/M^3, and guaranteeing that the concentration of powder and dust released by the pulverizer in the fourth and fifth boiler rooms is less than 100 milligrams/M^3. The water treatment shop has two assigned responsibilities and 16 guarantees. The two assigned responsibilities are to guarantee the realization of the goals on cost and to guarantee a fixed number of workers. The 16 guarantees are to guarantee that the percentage of recycled sewage of the blast furnace is larger than 94 percent, to guarantee the quality of the gas washing water for coal gas in the blast furnace, to guarantee that the retrieval of the amount of gas ash produced and moisture is larger than 17 percent, to guarantee the number of Hongqi machines, the percentage in good condition, the percentage of A grade maintenance of the operational goals...etc.

The economic responsibility of the shop and the scientific offices are also divided and implemented down to every worker to become a system of individual economic responsibility. A few of the guarantees assigned to the individual are indices expressed in monetary units while most are quota requirements for operation and work requirements. They all directly or indirectly reflect comprehensive economic gain and environmental results.

Whether the indicators for evaluation and the quotas are advanced and rational affects the major problem of whether the state can receive more revenue, whether enterprises can retain more, whether workers can receive more, whether the active factors of the broad number of workers can be mobilized. If the goals are too lofty and cannot be reached, the masses will not be enthusiastic. If the goals are too low, the tasks will be easily completed, cash rewards will be easily obtained and the rewards will have no meaning. Therefore, when determining the goals of environmental pollution, we must start out from the actual situation of the plant and determine the goals according to the advanced average levels of the past at the plant. The goals can also be higher than the state's criteria for release and they can be lower than the state's criteria for release. The level of the goals can be adjusted in practice to maintain advanced level goals so that the units and the individuals must exert efforts to realize economic benefits.

After the goals have been determined, we must carry out strict evaluation. Without strict evaluation, then no matter how perfect the economic responsibility system is, it would be only a sheet of blank paper. We must evaluate every job strictly according to the economic responsibility of the guaranteed tasks. The individual cannot receive more income if the tasks cannot meet the goals and if they do not produce more economic revenue for the state. When evaluating environmental protection goals, we must not consider objective factors, we must not be polite, we must insist that everyone is equal in the evaluation of the goals. Rewards and punishment must be clear so that the rewards will truly serve as incentives. When Capital Steel Mill evaluated the amount of suspended substances in the waste water of the end mines of the mineral company and found that it surpassed the standard, the mill did not consider objective factors and it withheld nearly 20,000 yuan in cash rewards.

Evaluation of the individual worker must be strict when evaluating the tasks he guaranteed to perform and the execution of regulations and systems must also be evaluated. Those who violate the rules should not receive cash rewards for that month or their cash rewards for that month should be withheld. Capital Steel Mill strictly acted according to "the three 100 percents." This means systems and regulations must be carried out 100 percent, violators of the system and regulations must be recorded and reported 100 percent, and all cash rewards for that month to the persons involved must be withheld 100 percent. For example, two people of the smoke and dust inspection work section of the monitoring station of the environmental protection department of the company violated the rules and all of their month's cash rewards were withheld. Capital Steel Mill insisted on carrying out the "three 100 percents" and therefore obtained visible economic gain and environmental results.

II. Environmental Management by Enterprises Must Carry Out Preparatory Work To Implement the Economic Responsibility System Well

The implementation of the economic responsibility system must possess definite conditions. Currently, the state has ruled that the economic responsibility system will first be implemented in some enterprises, this is related to the economic status of these enterprises, it is also related to the fact that they possess a definite managerial level. The management level of China's enterprises is somewhat backward, environmental management was established rather late, many enterprises are still unsound. During the course of implementation of the economic responsibility system we must also strengthen the course of environmental management, but establishment of the economic responsibility system afterall requires some basic conditions. Comparing the environmental management at the bureau level and other specializations of the enterprises, environmental management lacks a foundation, and we are still far from having the basic conditions necessary for the establishment of the economic responsibility system. Therefore, preparatory work for environmental protection by enterprises should be done well in time.

First we must have ideological preparation.

The environmental protection departments of enterprises must fully understand the major significance and function of the economic responsibility system. They must have a sufficient understanding that the economic responsibility system in environmental protection is a component of the economic responsibility system of the whole plant. Any idea that deviates from the goals, the content and the steps of the economic responsibility of the whole plant and emphasizes that environmental protection should be an independent system is not practical and will not be successful. Temporary success will not be stable and there will not be any vitality. This means, we must firmly establish the unity between environmental protection and production, the coordinated development of environmental protection and production, and the viewpoint of uniting environmental results and economic gain. Deviating from this viewpoint will make it impossible to include the economic responsibility system in environmental protection in the economic responsibility system of the whole plant, and to root environmental protection in the work shifts.

Second, we must establish the responsibility of division of labor in environmental protection.

The prerequisite of an economic responsibility system is to clarify responsibilities. Without establishing responsibilities, duties, authority and benefits will be empty talk, and it will not be possible to establish a responsibility system. Comparing environmental management and other specialized management tasks of enterprises, although some responsibilities have already been clearly stipulated, some enterprises have still not completely implemented them. This is a problem that must be solved in preparing for the implementation of the economic responsibility system.

Who should be in charge of environmental protection in enterprises? In view of the nature of environmental protection work and the practical experience of several years, the plant director should be in charge. In view of the experience of advanced enterprises in implementing the economic responsibility system, the plant director must also be in charge. The state has already stipulated in work regulations for plant directors that environmental protection of an enterprise should be their responsibility. Now the question of implementation.

Large and medium sized enterprises should set up environmental protection agencies, this has already been stipulated by state laws. Environmental protection agencies should be comprehensive agencies, they carry out comprehensive management for the environmental protection profession on the basis of division of labor by related service departments. All of the departments of planning, production, capital construction, finance, energy, science and technology, and equipment safety of an enterprise have environmental protection duties. They should all include environmental protection tasks in the work of their own department. It seems that such a division of responsibility is appropriate, and it is also a condition that must be possessed in the implementation of an economic responsibility system.

Finally, we must establish the foundation of basic tasks.

The economic responsibility system, in environmental protection, must take monitoring of data as the foundation. Without necessary data, the degree of completion of responsibility cannot be evaluated, and the size of economic benefits cannot be determined. The monitored data required by the economic responsibility system are stricter than the data upon which the general efforts to grasp environmental quality and calculate the fees for release of pollutants by the whole plant are based. All data used for evaluation and grading and for evaluating points and evaluating rewards have the basic requirement of being accurate and on time. There must be a unified system for transmitting the monitored content, the method and data.

Economic responsibilities are realized by goals, these goals are evaluating goals, their requirements are strict. The environmental protection goals of the economic responsibility system of the whole company of the Capital Steel Mill include 10 categories:

1. Goals of conserving resources, energy and raw materials consumption: These are mainly to guarantee conservation of resources and energy in production, reduce consumption, reduce the amount of "three wastes" released, to realize unified economic gain and environmental results. For example, evaluating goals to compare energy consumption, the amount in furnace coking and comprehensive coking etc. can be established for a unit ton of steel.

2. Goals to comprehensively utilize the "three wastes": The factory, the shop and the work section should all guarantee the task of retaining funds for comprehensive utilization of the "three wastes." For example, the steel slag plant of Capital Steel Mill guaranteed a profit of 400,000 yuan and produced 160,000 tons of slag. The user unit must guarantee that the funds are used up. The steel mill guaranteed that the amount of funds retained for comprehensive utilization of the "three wastes" by the whole company was not less than 4.8 million yuan.

3. Goals to realize clean factory and shops: According to the actual situation of enterprises, the units and the time to enter the factories and shops to clean them should be established and inspection and evaluation should be done according to schedule.

4. Goals for projects to treat pollution within a time limit: The Capital Steel Mill asked the Miyun Limestone Quarry and the Dashihe Mineral Selection Plant to realize a goal of over 90 percent in treating toxicity in dust and to meet the standards in Beijing City for treatment within a time limit.

5. Goals to control the release of various types of pollutants: The first effort is to control the release of pollutants by the polluting source and the second is the goal to control the release of pollutants when the environmental protection facilities are in the best operating condition.

6. Goals to control the total amount of pollutants of the factories and the shops: For example, the coking plant has four goals to evaluate and control the total release of pollutants at the release point.

7. The goals of the four percentages for environmental protection facilities: These are the controlling goals. They are the percentage of good equipment, percentage of work, percentage of treatment, and the percentage of the efficiency of treatment.

8. Goals for best operation at the work post and work requirements: Certain key posts must exercise strict control of goals for operation and work requirements.

9. The goal for the retrieval and utilization of resources: For example, the 94 percent rate of recovery of water used to wash gases in the blast furnace of the power plant is included as an evaluating goal. At some plants, the water recovery and utilization rate is 100 percent.

10. Rationalization of productive organization in environmental protection and rationalization of business management. Evaluating indices must be established according to the factory, work, economic gain and environmental gain.

The economic responsibility system has not been established for very long, the economic responsibility system in environmental protection is even newer. Although they have shown a vitality at the time of their birth, they are not yet mature and need our continued summarization and improvement so that they will be perfected.

9296
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INCORPORATING ENVIRONMENTAL PROTECTION INTO ECONOMIC RESPONSIBILITY SYSTEM

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 5, May 82 pp 2-4

[Article by Zhao Zongliu [6392 4844 3177] and Zhuang Ronghua [8369 2837 5478]: "Strengthen Environmental Management by Enterprises in Implementing the Economic Responsibility System"]

[Text] I. Implementation of the Economic Responsibility System Has an Important Significance and Function in the Management of the Environment by Enterprises

A. Problems encountered in environmental management by enterprises

As environmental management by enterprises develops, problems that need to be studied and solved will emerge continually. The main problems are:

1. One problem is the relationship between environmental protection by enterprises and the development of production and the improvement of economic gain, how can the environment be combined with production.

2. Environmental management by enterprises has many aspects. The problem is how to grasp the key problems to lead environmental management to a higher level.

3. There are problems involving the plans for environmental protection by enterprises, the principles underlying the plans, methods and procedures, how can the plans be implemented and assessed.

4. There are problems involving the technical line in environmental protection by enterprises, the economic, technical and management measures.

5. Data management is the basis of modern management, how to establish data management and an index system for the environment.

Solving these problems will have practical significance and a profound influence on stimulating the development of environmental protection by enterprises and in exploring China's own ways of environmental protection. But how do we study and solve these problems? There have been several different opinions over the past years. Now, in view of some of the enterprises that have implemented the economic responsibility system, as long as we include environmental protection in the economic responsibility system, we can better stimulate efforts to solve the above problems, and thus enable the level of environmental protection by enterprises to improve by a relatively large extent.

B. We should implement the economic responsibility system so that production and environmental protection will both gain

The economic responsibility system is a new form of management and distribution centered around efforts to improve economic gain under socialist conditions. We should change state plans and tasks into the economic responsibilities of enterprises. We should combine duties, authority and benefits, contract work to each level and implement them as an individual economic responsibility system so that the masses will become the masters of the enterprises, and to reflect the superiority of socialism. The economic responsibility system includes environmental protection. The so-called economic responsibility system in environmental protection is only one part of the economic responsibility system. Separated from the economic responsibility system, the economic responsibility system in environmental protection will lose its basis.

The enterprises that have already implemented the economic responsibility system have more or less included environmental protection, and are developing towards the fusion of production and environmental protection and rooting environmental protection work deeply in the shifts, thereby obtaining preliminary achievements. There are also some enterprises that have included environmental protection in their work by combining it with the rewards system although they have not implemented the economic responsibility system. For example, in the small percentage competitions to develop comprehensive economic indices carried out by some enterprises in Shanxi, environmental protection goals constituted 5 to 15 percent. Enterprises in many regions have levied fees on the release of pollution in the workshops. A number of enterprises in Hunan Province have registered some success by having the parties assigned the tasks and responsibilities of environmental protection, carry out the work according to the agreed-upon contracts.

The Capital Iron and Steel Company is an advanced enterprise that has implemented the economic responsibility system, it has been praised by leading comrades of the State Council. The System Reform Group of the State Council and the Economic Research Center of the State Council have also organized special forces to summarize and popularize the experience of that company. The company has undergone visible changes after implementing the economic responsibility system. In the first half of 1981 before implementing the economic responsibility system, the average monthly profit was 23.34 million yuan, from August to December after implementing the economic responsibility system, it realized a monthly profit of over 30 million yuan for 5 consecutive months, showing an increase of 28 percent over the first half of the year and creating a new level in its history. All three profit rates improved visibly. The profit margin in productive value reached 38.55 percent, the profit margin in capital reached 25.61 percent, and the sales profit reached 33.79 percent, all creating a new level over the past and the best level for the nation's joint steel enterprises. Some major technical and economic indices continued to improve and maintained their advanced levels. In 52 comparable indices, 30 were leaders in the same industry. The four indices for the coefficient of utilization of the blast furnace, the ratio of feed to coke, the comprehensive coking ratio, and the percentage of finished products from ingots reached advanced international levels. At the same time, environmental benefits were greatly improved. The total amount of waste water released by the company reached the state's standards for release, and the average rate of utilization of recycled water in 1981 reached 85.5 percent. The amount of falling dust measured in 1980 was 130 tons/square kilometer/month. This dropped to 75.37 tons/square kilometers/month, a drop of 40 percent. Noise in the plant was measured at 62 decibels, lower than the state standards. In 1981, the environmental and economic gain rose to 12,095,000 yuan and in 1981, the steel mill was evaluated as a model advanced unit in environmental protection by the Ministry of Metallurgy.

II. The Important Function of Implementing the Economic Responsibility System in Environmental Management by Enterprises

Analysis of Capital Steel and other enterprises show that the economic responsibility system serves the following four important functions in environmental management by enterprises.

1. It is an important step in realizing scientific management of the environment.

Implementation of the economic responsibility system can greatly improve the level of management and administration of an enterprise. The higher the level of management of the entire enterprise, and the more developed its modern production, the more beneficial it would be to the scientific management of the environment and to the prevention of industrial pollution. We cannot imagine an enterprise that is backward in management and administration creating a beautiful environment.

Environmental management must be scientific. Managing automated production equipment using the methods of the handicraft industry cannot manage production well. What constitutes scientific management of the environment?

First, scientific management is standardized management. Poor organization, doing things bit by bit, lack of coordination and the lack of a definite system do not constitute scientific management. The economic responsibility system requires that environmental management establish a responsibility system, all echelons have their duties, authority, and benefits in environmental protection. These duties, authority and benefits must have a whole set of management methods and systems, a standard management order must be established before it can work.

Second, scientific management is modern management. Modern management not only needs quality, it must also have quantity. In order for the economic responsibility system to link efforts with economic benefits and to provide rewards an punishment, it is necessary to establish modernized quantitative analytical management. Before Capital Steel implemented the economic responsibility system, monitored data were basically used only to reflect the situation. After establishing the economic responsibility system, the nature of monitored data changed, they became the tools for examination and the basis for evaluating achievements, therefore they effectively promoted the development of monitoring work. The economic responsibility system in environmental protection by the plants and mines subordinate to Capital Steel has 43 guaranteed targets, each month, each target is measured three to five times and its average value is taken as the basis for examination. There are rewards for meeting the targets; rewards are withheld for not meeting the targets, favors are not given and situations are not analyzed, everything is based on data.

Finally, scientific management is highly efficient management. It requires enterprises to input less to produce more and to improve economic benefits. Implementing the economic responsibility system is an important link in improving efficiency in environmental management and the economic gains of the enterprise. The steel slag plant of Capital Steel was 175,000 yuan in the red during the first half of the year before implementing the economic responsibility system, after implementing the economic responsibility system, it only hoped to stop losing money. After implementing the system at each level and assigning responsibility to each individual, workers improved labor efficiency and opened up sales everywhere. By the end of the year, the plant showed a profit of 176,000 yuan during the second half of the year and became the outstanding unit of the company.

2. It is an important guarantee to realize environmental protection plans.

Implementation of the economic responsibility system must first complete state plans and guarantee macrocosmic economic benefits so that all major economic activities of the enterprise can be included in state plans and the general goals of production management of the enterprise can be realized under the guidance of the macrocosmic economy. The enterprise and the individual worker can only realize benefits under the prerequisite that the enterprise completes the general targets. The goals of environmental plans and the technical measures and plans to realize these goals are all part of the general objective of the enterprise. They should be assigned and implemented in the same way and must become the economic responsibilities of each level down to every worker.

Why have the environmental protection plans of many enterprises failed in the past? One, there were no people to carry out the plans; two, strict examination and necessary rewards and punishment were lacking; three, necessary measures were lacking. Through the economic responsibility system, these problems can be solved better. Capital Steel assigned the responsibility of adopting certain control techniques and measures needed to the basic levels. This included the responsibility of solving pollution further in the economic responsibility system and effectively guaranteed the realization of environmental protection plans.

3. It can stimulate the leadership of enterprises and the workers to actively prevent and control pollution.

Because the economic responsibility system divides the economic management of the whole factory into duties and managerial authority and benefits and uses the completion of the responsibility to evaluate economic benefits, it first establishes the responsibility of the plant manager in environmental protection and environmental protection has become a responsibility of the plant manager in leading the enterprise. In the evaluation and records for rewards at Capital

Steel, the plant manager's responsibility in environmental protection constitutes about 5 percent, the responsibilities of the deputy plant manager in charge of environmental protection constitute 5 to 15 percent, the responsibilities of the assistants to the plant manager (office of engineers), related department chiefs, shop managers constitute 10 to 20 percent.

Many comrades paid attention to mobilizing the masses to carry out environmental protection. But how to make the polluters responsible for environmental protection and how to make everyone engage in and be responsible for environmental protection were questions that were not resolved in the past. In the economic responsibility system, the responsibilities of environmental protection were assigned to the shifts. "Everyone shouldered a heavy responsibility and everyone had a goal," thus the enthusiasm of numerous workers in preventing and controlling pollution through technical improvements and minor alterations and changes and in carrying out management measures such as preventing leakage at the work post during production operations was improved. The vacuuming shift, in order to remove dust from the power boilers at Capital Steel, carried out more than 10 renovations of improving the automatic vibration and dusting system of the vacuum, perfecting the rectiformer, installing a cabinet by the vacuum housing in order to realize the "five systems of full responsibility" and "or guarantees" of the economic responsibility system. They worked hard to realize the goals for best operation, best consumption and best environment. Because everyone had a responsibility, among the 582,839 dynamic and stationary sealed points in the pipe network of the Capital Steel Company, the number of leaking points have been reduced by 313. In the overall pipe network, the leakage rate was 0.57 percent at the beginning of 1980. This dropped to 0.055 percent in December 1981, and there was a group of plants and shops that had no leaks at all.

4. It enhances environmental protection work.

The economic responsibility system has strengthened the two fundamental tasks of establishing a responsibility system in environmental protection and data management. In the past, most of the responsibility systems in enterprises were concerned with production, technology and business, the responsibility for environmental protection was not sufficiently clear and definite and it was not implemented. Implementation of the economic responsibility system requires everyone from the plant manager down to every worker to shoulder specific responsibilities in environmental protection, and there must be strict criteria for examination. This is one of the major capital construction tasks in environmental protection. Data compilation is the basis for establishing quotas, examination results and distribution of benefits in the economic responsibility system. Environmental statistics are still weak, and are not suited to implementing the economic responsibility system. We must hasten the collection and management of data. Capital Steel established and perfected 15 kinds of primary data for environmental protection while it implemented the economic responsibility system, making environmental protection data regular, standard and scientific.

The economic responsibility system has not only pushed forward the establishment and development of an index system for environmental pollution, it has also gradually turned the simple pollution control indices into a system of indices of comprehensive economic gains. This is welcomed progress in environmental management.

The economic responsibilty system has pushed forward the renovation of specialized management in environmental protection, serving the improvement of economic gain and environmental gain and enabling economic and environmental results to be unified.

The economic responsibility system requires a strong monitoring team and high quality monitoring results, otherwise the assigned and guaranteed goals in environmental protection cannot be examined. At present, monitoring and measurement are weak. Capital Steel fully developed the function of second level monitoring. All plants and mines that had monitoring and testing capabilities were responsible for testing the goals in environmental protection at their own plants. The company's environmental protection office only inspected at random, supervised and inspected actual measurements irregularly and inspected the methods of analysis. The task of examining and testing environmental protection results by units without monitoring and testing means was entirely shouldered by the monitoring and measuring station of the environmental protection office to suit the needs of the economic responsibility system.

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CONSERVATION, EFFICIENCY HELP CUT COST OF REDUCING POLLUTION

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 3, 1982, pp 4-6

[Article by Qu Geping [2575 2706 1627]: "Prevent and Control Pollution, Build a Protective Civilizaton"]

[Text] Industry is the major source of environmental pollution in China. People acknowledge the damage due to industrial pollution and they are worried but they blanch at the mention of controlling industrial pollution. Why? Because a lot of money has to be spent, the money, however, is not available, this has hindered the control of industrial pollution for a long time.

Does controlling industrial pollution really require spending a lot of money, is there really no money or is the money insufficient? The experience of Anshan Steel Works and many other factories, mines and enterprises has given an answer to the contrary. Their attitude towards controlling industrial pollution was not to wait passively and ask the higher authorities for money. Their leadership emphasized the problem, insisted on self-reliance, mobilized the masses, and created wealth. As a result of their efforts, different measures to control industrial pollution were implemented. The environment continued to improve while harmful pollutants were changed to beneficial materials and many new products were produced. Many materials and much energy were conserved, and growth in production was stimulated. What are the methods and the basic experience of Anshan Steel Works and the localities in controlling industrial pollution?

First, they developed comprehensive utilization of resources, this involved creating a source of wealth and reducing the flow of pollution. There are two main sources of industrial pollution: one is erosion of materials, the other is waste of energy. There are two positions on this question: one is to develop comprehensive utilization, turn disaster into benefit, and create new wealth. One is to let things run their course, worsening the damage from pollution. Anshan Steel Works followed the first approach. They recovered 140,000 tons of pulverized iron, 2,000 tons of pulverized coke, 220,000 tons of steam, 65,000,000 tons of water, and 450,000 tons of waste steel and iron. They conserved 40,000 tons of coal valued at 29,000,000 yuan by using surplus heat each year in comprehensive utilization, and the profit reached 14 million yuan. They mainly used this source of funds to prevent and control pollution. This type of "snowballing" to create wealth has broadened the scope of comprehensive utilization, quickened its progress, and created greater demand for pollution control.

Developing comprehensive utilization of industrial pollutants is a positive way to eliminate pollution. Premier Zhou issued many directives regarding this supporting the two statements, "reverse a harmful trend and recycle waste material"; he believed they fully express the dialectic method. There are many ways to comprehensively utilize the "three wastes" in industry. The experience of some factories and mines show that at least the following methods have produced rich results: (1) retrieval and utilization of discharged materials. Some of the substances that have been discharged along with gases or liquids have not changed their original physical and chemical properties, they can be retrieved as industrial raw materials or industrial products. The pulverized iron and pulverized coke recovered by the Anshan Steel Works and the powder and dust recovered by the cement plant belong to this type. (2) Recycling and utilization of water and using one source of water for many purposes. The Shanghai Yangpu Lumber Plant recycled and utilized waste water. The rate of utilization reached 96 percent; this not only eliminated pollution, it also visibly enhanced economic gain. Each year, 240,000 yuan in costs were saved, an additional profit of 330,000 yuan was realized, and in less than 3 months, the investment in construction for recycling and utilizing waste water was recovered. The Shandong Paper Manufacturing Plant used the alkaline waste water discharged by the First Jinan Printing and Dyeing Plant to make pulp. As a result, both plants gained, each year they saved 230,000 yuan. Now, many cities suffer water shortages; conserving water is a positive way to ease the shortage. (3) Utilization of surplus heat. The Capital Steel Works converted boilers from burning coal to burning coal gas from blast furnaces formerly released into the atmosphere. This visibly reduced atmospheric pollution, 40,000 tons of coal were conserved a year, and 2,200,000 yuan in profits were realized. Investment made in the year produced results and the investment was recovered within the year. The plant also utilized the heat released during the tempering process for heating an area covering 480,000 square meters, thus 46 boilers were shut down. In one heating season, 24,000 tons of coal were saved and a gain of 1 million yuan was realized. The amount of substances discharged was reduced considerably and the quality of the atmosphere improved. There is a lot of surplus industrial heat, estimates of the metallurgical sector alone show that each year, the amount of surplus heat that can be used can reach 5 million tons of standard coal. The chemical industry, light industry, building materials industry and power industry, all have a lot of surplus heat that can be used. Fully utilizing surplus heat has an important significance in improving the environment and conserving energy. (4) Comprehensive utilization of the "three wastes." The "three wastes" are harmful if discarded but they become valuable when used. Shandong Zhaoyuan Chemical Plant is a small plant producing phosphate fertilizer; the plant utilized "the three wastes" to produce over 10 new products, investment totalled 720,000 yuan. This not only basically reduced serious pollution and eased the tension with the farmers, it also obtained over 900,000 yuan worth of profit from comprehensive utilization of the "three wastes." The development of comprehensive utilization did not hinder production but effectively promoted the development of production; it did not reduce revenue but increased revenue. In their own words: "Our plant has grown and thrived by relying on the 'three wastes'." Because of the development of comprehensive utilization, the plant leads similar factories throughout China in product variety, quality, profits and environmental protection. This plant's experience is convincing because it is a small plant jointly operated by the county and commune; the technical strength and material conditions cannot compare with those of large and medium enterprises. The plant was able to change the "three wastes" that were harmful to the environment into wealth because the plant possessed the spirit of being equally responsible in its products and in environmental protection. At the same time, the plant realized that without good environmental protection, it would not be possible to expand reproduction, let alone maintain simple reproduction.

Large and medium sized enterprises have better conditions to achieve what a small plant can achieve, and should be able to do it better.

To promote the comprehensive utilization of the resources of the "three wastes," we must also conscientiously implement the policy of reward and punishment stipulated by the state so that industrial and mining enterprises and workers can truly receive material benefits to push forward the widespread development of comprehensive utilization further.

Second, to strengthen environmental management by the enterprises, we must use management to promote prevention and control. China's industrial pollution, in a large degree, is caused by poor business management. According to the surveys of some regions, poor management is responsible for about 50 percent of the harmful substances released by industry. Even if we calculate this at 30 to 40 percent, the proportion is shocking. Strengthening environmental management by the enterprises is a way to greatly reduce industrial pollution without spending much money. Some enterprises have recognized this point and have done this; they have rapidly reduced serious pollution. Their main methods are: (1) They have a positive and practical plan to prevent and control pollution; this plan is an important part of business growth and technical improvement. With this plan, all the workers have a direction and a goal and this helps to arouse their fighting spirit. For example, the 1981-1985 environmental protection plan established by the Anshan Steel Works established the goals and annual activities and measures for those five years. This is an important factor in their continued progress in environmental protection during recent years. At present, China's industrial enterprises are combining reorganization and readjustment to establish development plans. Each enterprise should be like Anshan Steel Works, taking the prevention and control of pollution and environmental protection as the main points to include in their plans. The enterprises should never repeat the mistake of caring only about production and not caring about the environment. (2) Established environmental protection laws, like established production management laws, are the rules and laws of the factory; all workers must abide by them and carry them out. Now, many factories have established such management regulations and have established methods of examination, reward and punishment. Some factories have also combined production, environmental protection and the worker's personal benefits in implementing the "economic responsibility system of linking production with remuneration." This has mobilized the enthusiasm of numerous workers in preventing and controlling pollution, and good environmental and economic results have been realized. (3) We must implement a method of controlling the total loss of pollutants. This is a management method established by the Shenyang Chemical Bureau to control industrial pollution and to increase economic benefits. This method shows that harmful substances released by industries can all be traced, their origin and their destination can be found, and they can be analyzed and calculated. According to the analysis of typical technological processes, the amount of materials lost because of poor management has reached as high as 86 percent. This method is based on environmental standards; it combines the technical facilities of the factories and the management level, and it is assigned by the bureau to the factories. Factories assign the goals to the shops, the work sections and the work posts, and establish methods of evaluation and rewards. This method combines the production task with pollution control; it combines the benefits of the state, the enterprises and the individuals, and has visibly reduced consumption and environmental pollution. This method has guaranteed the systematic consistency of production and environmental protection, changed the attitude that the prevention and control of pollution can be managed or left unmanaged. This is a new development in business management and environmental management, and overall implementation of this system has an important meaning in controlling industrial pollution. (4) We should develop activities to clean up the factories. This is an activity widely carried out by the Shandong Chemical Industry Department and the Metallurgical Department within their own professions. Cleaning up the factories means to implement the goals of comprehensive utilization of the "three wastes," to guarantee a percentage of equipment in good condition, to control noise and vibration, to ensure shop sanitation, work post sanitation, appearance of the factory premise, greening of the grounds by shops, groups and individuals, and to combine the goals with production management, the "five stresses and four points of beauty," and rewards and punishment. Practice proves that this activity is beneficial to strengthening overall management of the enterprises, and it promotes prevention and control of pollution. All enterprises that have launched this activity have created drastic changes in the factory environment and the people's spirit. (5) We should reorganize the appearance of the factory and green the grounds on a large scale. This is a measure that does not require spending a lot of money and can change the appearance of the factory area within a short period. Many factories have organized surplus production personnel into greening teams or janitorial teams to perform sanitation work and to plant trees and grass. After a few years, landscaping of factory areas has been realized. Flowers and grass are everywhere, trees provide shade, and the scenery is pleasing. (6) We should establish environmental management agencies. All units that have done a good job in environmental protection have established and perfected a strong and forceful environmental management agency which has become an important part of business management. The agency supervises the thorough implementation of environmental rules and regulations.

The measures cited above to improve management and to promote prevention and control of pollution, first do not need much money; second, they do not require sophisticated technology and equipment. If they are stressed, every factory can carry them out. Can we eliminate pollution caused by poor management within 2 or 3 years? This should not be considered a very lofty goal.

Third, we should combine efforts with technical improvement to prevent and control industrial pollution. Industrial pollution is formed during the production process. The amount of pollutants produced is directly related to the techniques and the equipment used. China's industrial pollution is serious; one major reason is that the techniques are backward, the technology is out-dated, and the equipment is old. To change the backward situation in industrial technology is a fundamental way to strive towards a basic improvement in China's financial and economic situation and it is needed in promoting industrial modernization, controlling the polluting source and improving the environment. The experience of some advanced units shows that all of them have combined efforts tightly with technical improvement and they have realized visible results in preventing and controlling pollution. Their method is: (1) to renovate equipment, use advanced energy conserving equipment to replace old and out-dated equipment, especially to replace those old fashioned boilers that consume too much coal; (2) to reform technology, use non-polluting or low-polluting technologies to replace techniques and technologies that have a high consumption and that cause serious pollution, in this regard the chemical industry, light industry and the metallurgical industry have achieved welcomed achievements; (3) to change raw material supply lines, to use non-toxic or low toxic raw materials to replace toxic and lethal raw materials, which has improved the working conditions and reduced environmental pollution; (4) to use centralized heating and to use large boilers that have a high thermal efficiency to replace small boilers that are scattered and that have a low thermal efficiency, to establish heat supply centers between enterprises or regional centers, which has conserved large amounts of coal and visibly reduced atmospheric pollution; (5) to develop scientific experiments, actively study new techniques, new technologies and new equipment to control pollution, and to guarantee that technical improvements are smoothly carried out.

Combining technical improvements and adopting measures for the comprehensive prevention and control of pollution do not need much money, produce great results and benefits. This requires the technology management departments and all industrial enterprises to pay attention to implementing measures to prevent and control pollution while establishing technical improvement plans so that China's enterprises can truly become clean and civilized modern socialist enterprises as technical improvement progresses.

Fourth, we should combine efforts with industrial readjustment and improve irrational distribution. Some regions in China have serious pollution; irrational distribution is one important reason; particularly the industrial enterprises located in cities, residential areas, regions of water sources and tourist and scenic regions have created even greater pressures upon the environment. What we call the efforts to change the irrational distribution of industry includes two aspects: One is to move those irrationally situated factories; the second is to readjust the structural distribution of those irrational industries, to change seriously polluting industries or products into non-polluting or low polluting industries or products. In this regard, the chemical industry in Jinan conducted a beneficial test. The closing, shutting down, combining and transferring of some enterprises are an important policy and measure to reorganize and readjust the enterprises. Those enterprises that waste a lot of energy and materials, that seriously pollute, that cannot be corrected over a long period, that have been the target of strong complaints by the people and masses, must all be closed, shutdown, combined, transferred or moved so that the serious and irrational distribution can be turned around through readjustment.

The four aspects above are the main experience of each locality and each profession in controlling industrial pollution. These experiences are valuable because they are fundamental and have common significance in controlling industrial pollution. Of course, not all harmful pollutants can be completely eliminated by these four methods; some necessary purification facilities must be built. If we say that during the past few years, controlling industrial pollution has only been a general campaign without concrete methods, then, now, we have more practical and feasible methods and measures. More importantly, we must find ways to create and accumulate wealth so that we can prevent and control industrial pollution through self-reliance.

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CONTROL OF INDUSTRIAL POLLUTION HINGES ON 'THREE WASTES' MANAGEMENT

Beijing ZHONGGUO CAIMAO BAO in Chinese, 21 Aug 82 p 1

[Article: "Preventing and Controlling Industrial Pollution Are the Social Responsibilities of Enterprises, The Conference To Exchange Experience in Preventing and Controlling Pollution by the Nation's Industries Believes That Eliminating the "Three Wastes" in the Production Process Is the Most Positive and Most Effective Way To Prevent and Control Industrial Pollution"]

[Text] The conference to exchange experience in preventing and controlling pollution by the nation's industries ended yesterday. It strongly pointed out that prevention and control of industrial pollution are the social responsibility of the enterprises. When we engage in production and construction, we must emphasize environmental protection, we must closely combine the development of production with environmental protection; we must actively begin prevention and control of pollution, and strive to visibly improve our nation's environment within a short time.

Attending delegates believe our nation's environmental protection must be based on the rational utilization of resources; the control of industrial pollution must grasp this fundamental question. We must start out by strengthening business management, reforming technology, renovating equipment, turning the "three wastes" (waste gas, waste water and waste slag) into resources so that resources and energy sources can be converted into products to the maximum extent and the release of pollutants can be reduced to a large extent. The "three wastes" produced during the course of industrial production must be eliminated as much as possible. This is the most positive and most effective way to prevent and control industrial pollution.

The delegates also believe that in order to effectively prevent and control industrial pollution, each region, every industry and every factory and enterprise should draw up plans to prevent and control pollution, include such plans in production development plans and technical improvement plans, combine them with industrial readjustment and reorganization, improve the distribution of industries to reduce environmental pollution, actively implement all economic and technical policies that will benefit economic development and environmental protection. We must insist on the policy of self-reliance, mobilize the masses, develop the potential of enterprises, solve one's own pollution problems, exert efforts to channel available funds for environmental protection, and strengthen leadership in the prevention and control of industrial pollution.

This conference, sponsored by the State Economic Commission and the Urban and Suburban Construction and Environmental Protection Ministry, was held in Beijing on 15 August.

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BEIJING'S COMMUNE-RUN ENTERPRISES FAIL TO CARRY OUT ENVIRONMENTAL PROTECTION WORK

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 4, 1982, pp 6-7

[Article by Guan Li [4619 3810]: "Newly Built Commune and Brigade Enterprises Must Conscientiously Carry Out the 'Three Simultaneous Efforts'"]

[Text] In recent years, Beijing City's commune and brigade enterprises have developed quickly. Since 1974, the number of enterprises, the number of workers, the total production value and profits have respectively averaged an annual growth rate of 4.7; 23,833.2 and 46.8, all far surpassing the rate of development of state-run enterprises during the same period. The development of commune and brigade enterprises has served greatly to increase the income of farmers, promote agricultural production, support large state-run industries, satisfy the people's daily needs and employ surplus agricultural labor. But, a large number of commune and brigade enterprises did not conscientiously implement the state's regulations concerning the "three simultaneous efforts" during construction, thus, many problems have emerged in environmental protection. According to surveys, among the commune and brigade enterprises, in Beijing about 40 percent pollute to varying degrees, and those that have treatment measures constitute less than 10 percent. Of course, the result of treatment of even fewer enterprises have reached the standards. Existing problems in environmental protection are:

1. The environment has been seriously polluted, affecting industrial and agricultural production and the people's health.

A dye factory released a large amount of colored and toxic waste water and dust which damaged nearby farmland, reduced yields and polluted the water source. Compensation for the damage did not solve the problem and finally it was forced to change its product. An electroplating plant released polluted water containing as much as 6,230 milligrams/liter of hexavalent chromium per liter, surpassing the allowable content by more than 10,000 times! Many workers engaged in operations involving mercury, lead, chromium and benzene have been injured and poisoned, at some plants, the percentage of such victims among the total number of workers has reached several dozen percent!

Some enterprises released large amounts of the "three wastes" and polluted nearby farmland even to the point of causing death to livestock. The number of disputes caused by pollution has increased.

2. Failure to integrate plants increases pollution.

Now, throughout Beijing there are more than 600 electroplating plants and sites. Among them, commune and brigade enterprises constitute more than 200. The county with the most number of such enterprises has nearly 100. One production brigade even has three! Because of unplanned development, the capabilities of the facilities have far surpassed the need, therefore, many plants do not have sufficient tasks yet some plants still want to build new facilities. Due to unplanned, dispersed construction, the scale of these plants is small, the technology is backward, the consumption of raw materials and energy is frequently several times higher than that of large state-run plants. This not only creates waste, it also pollutes the environment, and it is out of tune with preventive and control measures. Some plants have used all means to "get business" encouraging the development of this incorrect practice.

3. Plants have been built at will without considering the overall plan and distribution of the city. For example, the Sijiqing Commune built a cotton textile plant in the middle of a group of wells at the Third Water Plant. The Yaoqiaoyu Brigade in Miyun County spent more than 100,000 yuan to build a tannery with an annual capacity of 30,000 pig and cow hides at the upper reaches of the Miyun Reservoir. If production begins, up to a hundred tons of various harmful substances and chemical raw materials would be flowing into the reservoir to pollute the body of water. Fortunately, the two plants described above were discovered, concerned departments order them to stop construction and to remove their facilities, but this created a serious economic loss.

There are far more problems in environmental protection created by commune and brigade enterprises; some of their detrimental results will only be exposed several years later.

Why have these problems emerged?

I. Several misunderstandings.

It is believed that commune and brigade enterprises are small-scale, therefore they will not create massive pollution. Commune and brigade enterprises are mostly small-scale, but because the technology is backward, the facilities are simple, the management level is low, consumption is large, their pollution is not necessarily less than that of large state-run plants and may even be more.

It is believed that commune and brigade enterprises are scattered, therefore they will not cause damage. Actually, this is not so. Because there are many commune and brigade enterprises (more than two times the number of state-run enterprises, in the future, they will rapidly and massively increase), they have already spread throughout the city, some are built inside zones of protected water resources, some are built in tourist and scenic areas and other important areas. Therefore, their damage cannot be ignored.

Some leaders only consider whether an enterprise earns money or not. Some even proposed the slogan: "All regulations that affect the increase in income of the commune and brigade must be abolished, every unit must be given the green light to increase income for the commune and brigade." These type of slogans are unilateral. We cannot act like capitalists, using every means to earn money. Commune and brigade enterprises must not only account for their own situation, they must also consider the situation of the whole society. They cannot sacrifice the environment of the capital and the health of workers and later generations to "become rich." In addition, protecting the environment well does not always conflict with profit, industries that do not pollute or those that produce little pollution can be developed. Are those plants with several dozen percent of their workers poisoned, those plants that have been forced to cease production and those plants that have been shut down able to earn money? There are many examples of enterprises that have paid close attention to protecting the environment, that have conscientiously carried out the "three simultaneous efforts" and that have become prosperous enterprises.

II. Related regulations promulgated by the state were not strictly implemented.

The "environmental protection law" clearly stipulates: "All enterprises and business units must pay full attention to preventing the pollution and destruction of the environment in site selection, design, construction and production. When carrying out new construction, remodeling and expansion, they must submit an environmental impact report and the report must be reviewed and approved by environmental protection departments and other related departments before designing can begin. Facilities that prevent pollution must be designed, constructed and begin operation simultaneously with the main body of the construction project. This is what is commonly called the "three simultaneous efforts." These regulations are very important in protecting the environment and preventing the production of new pollution; they should be conscientiously implemented by every unit (of course including commune and brigade enterprises). Now, the main reason that pollution in Beijing city has not been controlled and is continuing to develop is that a large number of newly built enterprises especially commune and brigade enterprises have not done things according to the principle of the "three simultaneous efforts," and they have carried out construction without review and approval by environmental protection departments. Some enterprises that have plans that have been reviewed and approved by environmental protection departments frequently do not implement the originally approved plans. Some projects have begun production immediately after completion without first being inspected by environmental protection departments.

III. Each related department "guards its own fortress" and does not communicate with others.

Some industrial departments, foreign trade departments and even certain offices of the Central authority and troop units proceed only from their own tasks and convenience and do not consider environmental protection of the capital, they contact communes and brigades directly to establish polluting enterprises without consent by related environmental protection departments. When the environmental protection departments learn about this, things have already been done. The Yaoqiaoyu Tannery described above was built with the support of the foreign trade department. This situation has occurred even more in the electroplating industry.

We can say at present that the problems that Beijing City's commune and brigade enterprises have in certain aspects of environmental protection are much greater than the problems that state-run enterprises have, and need to be solved more urgently.

How do we solve the problems? I believe the following must be done:

1. Education and propaganda must be carried out in farm villages to educate concerned departments in the "environmental protection law," the importance, the urgency and the knowledge of environmental protection so that the broad numbers of cadres and masses in the farm villages will understand that environmental protection of commune and brigade enterprises all have a special and important meaning to the capital. Each propaganda department must regard the environmental protection of commune and brigade enterprises as day-to-day work.

2. "Measures to manage environmental protection of commune and brigade enterprises in Beijing City" must be established for promulgation and execution by the people's municipal government or the Standing Committee of the People's Congress. The "measures" should clearly stipulate criteria of rewards and punishments.

3. The bureaus of commune and brigade enterprises of each ward and county and communes with many enterprises must appoint special personnel to manage environmental protection. The remaining communes must have people who are concurrently in charge of this work. Their duties and authority must be clearly established. The environmental protection departments of each ward and county must cooperate closely with such departments as the administrative bureaus of enterprises to do the work well together.

4. Deadlines for final treatment of pollution by presently polluting enterprises must be established. Projects in construction must be conscientiously reviewed, construction should be allowed to continue only after it has been reviewed and approved by environmental protection departments.

5. Related departments must establish concrete areas and zones in Beijing as water sources protection zones, scenic and tourist zones, areas of ancient relics and residential areas. Each related department should actively support regions like Miyun which have more economic difficulties and which require more environmental protection and help them establish non-polluting enterprises.

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TECHNICAL IMPROVEMENTS REDUCE POLLUTION AT PETROCHEMICAL PLANTS

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 4, 1982, pp 1-3

[Article by Yan Huan [3501 3883]: "Combining Technical Improvements To Prevent and Control Environmental Pollution"]

[Text] The Yanshan Petrochemical Company is a large joint petrochemical enterprise. Construction of the company began in 1968; now, it has 7 petrochemical production plants with a total of 41 sets of production equipment, 10 of which are complete equipment sets imported from abroad. It also has four auxiliary plants: a power plant, a machinery plant, an instruments plant and a major repair plant. Its established productive capabilities are refining 7 million tons of crude oil each year, synthesizing 370,000 tons of three major synthetic materials, and producing 30,000 tons of basic organic raw material.

In such a joint enterprise that has a production level of the 1950s and 1960s and technology and equipment of the 1970s, besides problems in production technology, the task of preventing and controlling pollution is fairly heavy. During the past 2 years, we gradually explored and found a way to combine technical improvements and environmental protection so that in the course of preventing and controlling pollution, investment would be less, the results would be fast, and both economic and environmental gains could be realized.

1. The company continued to improve its way of thinking, exerted all possible efforts to control damage due to pollution and to produce a definite economic benefits. The main office of the company built three treatment systems for polluted water mainly by secondary biochemical treatment systems for polluted water mainly by secondary biochemical treatment at the beginning period of plant construction. Later, it set up some other measures to prevent and control pollution, but these were mainly to control pollution and their ability to retrieve and use waste to produce a definite economic benefit was not too great. For example, the treatment of tail gas of nitric acid at the Dongfeng Chemical Plant uses the method of catalytic ammonia reduction to eliminate nitrides and oxides in the tail gases. Although this method is a relatively effective treatment and has eliminated pollution, but ammonia is needed in the course of catalytic reaction, therefore, after

the reaction, a part of the surplus ammonia is released along with the tail gases, and economically this was not sufficiently practical. Later, on the basis of continued improvement of thoughts and understanding, we paid attention to unifying environmental and economic gains, and we included projects to prevent and control pollution in the technical improvement plans of the enterprise. Gradually, the plant moved from the treatment of pollution to the comprehensive utilization of resources and energy. Each year, some projects to prevent and control pollution were arranged and included in technical improvement projects. Investment in pollution control projects came from private funds of the enterprise while some funds for projects of comprehensive utilization came from bank loans.

2. In technical improvement, pollution control projects and investment constituted a definite proportion.

We have included some environmental protection measures in technical improvement projects during recent years so that environmental protection projects and investment constituted a definite proportion in technical improvement work. In ordinary situations, the number of projects of environmental protection and investment in environmental protection as a portion of the technical improvement projects were increased year by year whenever possible. The 1982 plan included a total of 8 projects in environmental protection controlled by the main office of the company, constituting 12.1 percent of the total number of projects. Investment of 3.22 million yuan was arranged, constituting 10.5 percent of total investment (not including investment in capital construction). In addition, each plant also included in its technical measures some environmental protection measures and projects.

3. In technical improvement, projects with outstanding economic and environmental benefits were grasped as key points to promote their realization. In this aspect, our methods were:

A. In technical improvement, we used new methods, new technology and renovated techniques so that pollution was eliminated as much as possible in the production process. The catalytic reproductive process of the catalytic cracking equipment at the Dongfanghong Oil Refinery produced 80,000 cubic meters of reproductive tail gas per hour containing 7 percent of carbon monoxide. This part of the reproductive tail gas was directed to the boiler as fuel and a part of it was used but each hour there were still 40,000 cubic meters of tail gas that was released into the atmosphere. This polluted the environment and wasted energy resources. The plant began in August, 1980, to use a carbon monoxide combustion supporter. The ignition point of carbon monoxide was lowered and the oxidation activity of carbon monoxide was improved so that it burned to form carbon dioxide under lower temperatures. The content of carbon monoxide dropped from the original 7 percent to about 0.2 percent. This recovered and utilized energy and also reduced atmospheric pollution. At the same time, it improved the effective activity and selectivity of the catalyst so that the distribution of products improved and the recovery rate of light oil products improved. The investment in this measure and the equipment was 3,000 yuan. Because a combustion supporter had to be supplemented, the ordinary annual cumulative operating cost was 160,000 yuan. The added production value could reach 30 million yuan, and the net profit could reach 15 million yuan. Because the content of carbon monoxide was reduced by a large scale, each day, 140 tons less of carbon monoxide were released into the atmosphere. After inspection, the content of carbon monoxide in the air in the area of the plant dropped from 4.52 milligrams/standard cubic meter to 2.31 milligrams/standard cubic meter, and the content in the residential area dropped from 4.09 milligrams/standard cubic meter to 2.46 milligrams/standard cubic meter. Environmental quality visibly improved. Also, this year, we included a project to improve the oxidation and dehydrogeneration of butene and to improve the production of methyl cyanide at the Shengli Chemical Plant in the technical improvement projects of the company. The plant used a B-02 model catalyst developed by itself and changed the original fluidized bed reactor to a heat insulated fixed bed reactor. It was estimated that these measures would improve the product recovery rate from 50 percent to 71.6 percent and the selectivity could be improved from 72 percent to 92.4 percent. More importantly, the amount of compounds containing oxygen produced as a by-product could be reduced from 11 percent to 0.57 percent, basically solving the problem of separating organic compounds containing oxygen and pollution problems. After completing technical improvements, the level of production technology would be greatly elevated. The amount of butadiene produced can satisfy the needs for producing cis-butene rubber and at the same time, this will have basically solved the problem of environmental pollution.

B. In technical improvement, equipment should be improved, the performance of the equipment should be raised, and the amount of pollutants should be reduced. The petrochemical enterprises own a large number of storage tanks for hydrocarbons. During the course of storing these hydrocarbon compounds, respiration and fumes release several hundred tons of materials into the atmosphere every day. To eliminate this type of pollution, the Dongfanghong Oil Refinery has been using new types of tanks soft sealed by a floating cap and tanks that have an arched top with an inner floating cap since 1978 to reduce loss of oil due to evaporation in the storing process, some visible results have been achieved. The content of hydrocarbon compounds in the air over the top of the containers dropped 30 to 3,000 times from the original amount. The quality of the surrounding atmosphere improved considerably. For several years, the plant has rebuilt 11 of the 34 light oil tanks with a capacity of over 1,000 cubic meters and 4 out of the 8 aromatic hydrocarbons storage containers of a capacity of over 500 cubic meters. After similar improvement of one gasoline tank with a capacity of 3,000 cubic meters, 200 tons of oil worth 100,000 yuan were saved each year. The plant plans similar improvements for the remaining storage tanks to realize further gains by conserving resources and reducing pollution.

In the course of chemical production, leakage is very common because of obsolete equipment and corrosion of the medium. At the phenol acetone facility of the Siangyang Chemical Plant, a high concentration of polluted water frequently "rushed" the treatment area. Besides poor management, the main causes were defects in equipment. Although the equipment had been rebuilt several times, good results could not be obtained. To prevent and control pollution and reduce the loss of materials, we are preparing to continue technical improvements of the part of the facility for extracting phenol solution and related equipment, concentrating on pipes and meters centered around pretreatment of polluted water. According to estimates, if the average amount of materials released during the production of one ton of phenol acetone is reduced from 72.34 kilograms to 26 kilograms, then 410.41 tons less of phenol acetone worth 862,400 yuan will be released every year. A reduction in the loss of materials will create better conditions for treating polluted water.

C. In technical improvement, environmental protection and energy conservation should be combined to realize a combined gain in energy conservation and environmental protection. In 1980, the Dongfanghong Oil Refinery and the Shuguang Chemical Plant used advanced technology to develop energy conservation and environmental protection, completing a project to technically improve the torch. The original torch of the Dongfanghong Oil Refinery had a poorly-designed structure, the burning of combustible gases was not good, sometimes there was a lot of smoke. Each year, combustible gases equivalent to several thousand tons of fuel oil were burned away and a large amount of pollutants containing smoke dust and sulphur dioxide were released into the atmosphere, becoming one of the sources of serious pollution in the area of the Dongfanghong Oil Refinery. To conserve energy and reduce pollution, the Dongfanghong Oil Refinery built a low pressure gas storage and transport system including a 10,000 cubic meter gas tank and a low pressure gas recovery and utilization facility and designed and manufactured a smokeless low noise torch 80 meters high at an investment of 1.7 million yuan. Since the improvement facilities began operation, 300 to 700 cubic meters of low pressure gas have been recovered each hour throughout the plant. Under the lead of high pressure gas, the two boilers can completely utilize low pressure gas and the torch need not be lit in normal production. Each year, 6,000 tons of low pressure gas worth 300,000 yuan can be recovered and used. The content of hydrocarbon compounds in the air in the area of the plant was greatly reduced. The content of sulphur dioxide and noise in the area surrounding the torch were both within national standards. The Shuguang Chemical Plant is also prepared to further recover precious petrochemical raw materials such as ethylene and propene by cracking the tail gas of the wax burned away by the torch by rebuilding the torch. At present, construction of this technical improvement project has already begun by using funds allocated for environmental protection and comprehensive utilization projects. After completion of the measure, 5,000 to 7,500 tons of ethylene and 3,000 to 4,500 tons of propene can be recovered each year. These will increase the production value by 5 million yuan and profits by 4 million yuan. The resources that were originally sent to the torch and burned away can be used and their gain can be developed.

D. Wastes and by-products should be comprehensively utilized to recycle waste material and to turn harmful elements into beneficial ones. In the course of petrochemical production, many resources and energy are not fully utilized. They are released in various forms as waste and by-products and they cause environmental pollution. The Shuguang Chemical Plant releases more than 2,000 tons of waste each year in the course of producing alkyl benzene and lubricating oils (workers habitually call the waste "mud dregs").

Previously, these were abandoned or burned, wasting resources and polluting the environment. Since 1974, this plant thought of ways to recover benzene, aluminum trichloride and many types of oils from the "mud dregs." In 1981, a total of 2,700 tons of various types of materials were recovered worth more than 400,000 yuan. The Shengli Chemical Plant can recover 500 tons of butadiene worth 480,000 yuan each year from the tail gas of butadiene released by the plant. It has also recovered surplus oil and this can increase annual revenue by more than 30,000 yuan. These measures have used many resources that are wastes when abandoned but valuable when utilized.

Technical improvement work is a new road created by utilizing old enterprises to develop the national economy. It is also a good method of development by enterprises moving from "broadly defined intrafactory developmental measures" towards intensive developmental measures. Combining technical improvement to prevent and control environmental pollution is also an effective way of solving the problems of environmental protection. There are still many problems in our work and an overall plan is needed to include environmental protection plans. This requires an overall idea to unify environmental and economic gains. In addition, the gains need to be comprehensively analyzed and concretely measured and calculated.

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SHENYANG SMELTER'S CHIEF ENGINEER DESCRIBES HIS PLANT'S POLLUTION CONTROL SUCCESSES

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 6, Jun 82, pp 2-5

[Article by Chen Chuntai [7115 2504 0669], Plant Manager and Chief Engineer of the Shenyang Smelting Plant: "How a Heavily Polluting Enterprise Handles Environmental Protection"]

[Text] The Shenyang Smelting Plant used to be a heavily polluting enterprise. After several years of great efforts, it achieved good results in preventing and controlling pollution and in protecting the environment. Some views on how this heavily polluting enterprise managed environmental protection well are presented in the following.

I. The Foremost Question Is To Clarify Responsibility, Improve Understanding, Select the Right Way

At the end of 1977, we conducted a general survey of the distribution of the main polluting sources throughout the plant and the concentration of pollution. The results showed that the annual amount of sulphur dioxide released by 37 chimneys (3 taller than 100 meters, 34 under 60 meters) reached 74,000 tons, constituting about 45 percent of the total amount released in Shenyang City. In the 27,000 cubic meters of waste water released each day, pollutants containing arsenic and heavy metals amounted to 377 tons, and the amounts of copper, lead, zinc, cadmium and arsenic constituted 29.7 percent, 34 percent, 67.2 percent, 82 percent and 100 percent of the total amounts released throughout Shenyang City. The damage caused by pollution was serious; the area of the plant was covered by dust and smoke, grass, flowers and trees could not grow, even people had difficulty breathing. Three hundred workers who came into contact with sulphur dioxide were examined, 30 percent suffered from varying degrees of tracheitis. The suburb of Zhangshitun Prefecture used the sewage water from the exposed sanitation canal containing our plant's waste water to irrigate farmland. As a result, the soil of 15,000 mu of land was polluted by cadmium, the cadmium content in the soil reached 3.7 ppm. The rice produced from 6,000 mu of the contaminated rice fields had a cadmium content 10 times the standard and the rice could not be consumed.

Facing the reality of such heavy pollution, we launched propaganda and educational activities in environmental protection in depth and gradually unified understanding throughout the plant in the following aspects: (1) Strengthening environmental protection and realizing efficient production are determined by the socialist nature of enterprises. They are required by the goals of socialist production, they are important contents of business management. (2) Strengthening environmental protection by metallurgical enterprises is protecting precious resources of the state. (3) Strengthening environmental protection and realizing efficient production are the main goals of building modernization. (4) Strengthening environmental protection and conserving energy are the central links in improving old enterprises. In general, strengthening environmental protection is our inescapable duty. Especially enterprises like ours which are "heavily in debt" in managing pollution, should quickly control pollution, pay off the "debts" for the benefit of future generations.

There were three ways to solve the pollution at the smelting plant. One was moving the plant to a mountain valley; the second was to introduce foreign technology and ask foreigners to help; the third was to mobilize the masses, and solve the problem independently. After repeated study and trials, the first two ways could not be followed and the practical way was the third way.

The key to solving pollution independently was to select a plan that was both effective and economical. For this, we concretely analyzed and studied the causes that form the polluting sources and the nature of pollution. He believed that whether it is pollution by waste gases, waste water or waste slag, there were only two polluting sources: One was the technology and the equipment themselves, and the other was management and people. The nature of pollution can also be divided into two major corresponding categories; one category was pollution by technology and equipment, the other was pollution caused by management. Pollution by technology and equipment refers to pollution by the three wastes necessarily produced by production techniques and the facilities themselves at the present technical level of production. What we call pollution by management responsibility refers to man-made pollution caused by poor business management. There should be different plans and measures to prevent and control pollution of different natures. Generally speaking, pollution by technology and equipment is mainly controlled by treatment supplemented by management. Pollution by management responsibility is mainly controlled by management supplemented by treatment. Combining management and treatment is an effective way to solve pollution self-reliantly.

II. The Key Problem Is To Establish a Sound and Complete Environmental Management Procedure and a Management System

Practice proves that strengthening management is the most economical way to prevent and control pollution, and the only effective way to control industrial pollution and pollution caused by poor business management.

Therefore we established an environmental protection system of three levels including the plant, the shops and the work shift. An environmental protection office was established at the plant level; environmental work sections were established in the shops and special environmental protection engineers were assigned; environmental protection workers were assigned to the work shifts. Subordinate to the environmental protection office of the plant were an environmental monitoring station, an environmental management station, an atmospheric group, a water quality group and a comprehensive group. A strong team of cadres was assigned; a fairly large number of engineers and technicians with real talent and knowledge were added. The environmental protection office of the plant had its duties, responsibilities and authority; it was the command center of environmental work throughout the plant led by the plant manager. The environmental protection office was the nucleus; the department of plant planning, production, technology, equipment, energy, finance, engineering and supply all included environmental protection as the key work of their own departments. The whole plant formed an environmental protection management network that combined the higher and lower echelons and combined the masses with the professionals.

As the management body was formed, a management system was gradually established and perfected. There were six main management systems, "the environmental protection rules of the Shneyang Smelting Plant," the "duties of environmental protection offices," the "detailed responsibilities for inspecting and examining environmental pollution," the "system for sewage management," the "system for smoke and gas management," and the "management system for greening and beautifying the plant." On this basis, we concentrated on the following six aspects in management during the course of carrying out the system:

1. In the management of production techniques, we revised the past rules of caring only about production and neglecting production techniques and operations in environmental protection. We added technological and technical conditions for the prevention and control of pollution and for environmental protection and established economic and technical quotas. We rationally organized and arranged production to eliminate pollution in technological processes. For example, the production of indium was included in the treatment shop for copper and lead anodic mud in the past; the waste water containing cadmium was difficult to treat. Later, we moved the extraction of idium into the zinc smelting shop; the waste water containing cadmium was recycled back into the production system. Cadmium was extracted in the cadmium work section and pollution was eliminated.

2. In the management of equipment, we emphasized the quality of installation and equipment maintenance and prevented leakage. At the same time, we recovered dust, smoke and gases. The treatment of sewage and comprehensive utilization facilities were combined into one environmental protection facility and special personnel were assigned to take charge of management. When we started operating the production equipment, the environmental protection equipment must be started first or simultaneously. When the environmental protection equipment broke down, it must be repaired in time.

3. In the management of energy, we enforced the quota system for the consumption of oil and coal and controlled black smoke. At the same time, we stressed the conservation of water. Waste water from technological processes that affected production was treated and inspected before it was released; waste water that did not greatly affect production was recycled back into the production system or recycled for use. Waste water from the cooling equipment was re-cooled in the cooling tower and recycled for use. For example, the waste water that was produced in the process of using water to recover dust from the smelting of lead and that contained cadmium was returned together with the ash for sintering and mixing. The slag water from copper and lead punching was recycled in a closed loop; in winter, this water was used to generate heat.

4. The management of resources, we fully developed the superiority of this comprehensive smelting plant. The ash or residual slag produced in one shop was sent to another shop to extract the valuable metals in them; this eliminated pollution and also comprehensively utilized resources.

5. In labor management, we emphasized the implementation of the system of personal responsibility. We eliminated the discharge of pollutants caused by dereliction of duty.

6. In environmental management, we stressed monitoring, inspection, environmental quality evaluation, environmental and economic analysis, beautification and sanitation of the plant and implemented the rewards and punishment system.

Strictly implementing the various systems and concentrating on the six managerial tasks described above were very effective in controlling pollution due to technology and equipment and in eliminating pollution due to management responsibility. At the same time, they also had a definite function in strengthening business management.

III. The Central Problem Is To Select the Most Economical Plan of Prevention and Control

Strengthening management mentioned above is the most economical plan; we can cite two examples to further explain this problem. One is the retrieval of high concentrations of sulphur dioxide to make acid. The five sets of acid manufacturing systems at our plant can treat 130,000 to 140,000 standard cubic meters of smoke every hour. When we consider a 30 percent leakage rate for the system, only 100,000 standard cubic meters of smoke from smelting can be truly recovered. This means, we can exhaust the smoke from smelting copper but to recover the sulphur dioxide from the smoke from smelting lead, we still need to build another acid manufacturing system. But if we strengthen management, reduce leakage, reduce the amount of smoke from smelting to 110,000, the leakage rate of the system can be reduced 25 percent, and the five acid manufacturing systems can completely recover the highly concentrated sulphur dioxide smoke. If we strengthen management further and reduce the amount of smoke to 100,000 and the leakage rate to 15 percent, the acid manufacturing ability can be elevated another 5 percent. Thus, four acid manufacturing systems will be able to treat all of the smoke and one system can be set aside as a reserve during inspection and repairs. In this way, elimination of pollution by smoke with a high concentration of sulphur dioxide can be guaranteed. The other example is the treatment of water. At the beginning of 1978, the whole plant released 27,000 cubic meters of waste water, of this, 2,400 cubic meters of water were heavily polluted. It was not possible to treat such a large quantity in a centralized manner. Later, we cleaned the pollutants, divided the flow, recycled the water for use and stopped leakage, reducing the amount of waste water released to 11,000 cubic meters. Only 450 cubic meters of the water were heavily polluted. We originally intended to build a sewage treatment station to treat the water centrally; estimated showed that this required an investment of 4 million yuan and there were no technical problems. But economic analysis showed that centralized treatment was not as good as scattered treatment. As a result, we followed the principle that whoever pollutes is responsible for treating it; each shop treated its waste water separately. Total investment was only some 200,000 yuan, and in less than half a year, the amount of waste water released by the whole plant met the state requirements for the release of waste water.

The two examples above show that strengthening management and spending little or no money can realize good results. During the course of treating pollution, we should pay more attention to selecting the most economical plan. When we began studying the plan for treating pollution by technology and equipment, we believed that we should use new and advanced technology and equipment as much as possible, and should make major changes. Later, we went to Japan to investigate and discovered that some of their old enterprises did not rely on major changes to solve the problem of pollution. They also made improvements at the locality but the problem of pollution was indeed solved. By learning the Japanese experience and combining national conditions and plant conditions, our plant held 54 economic and technical discussion meetings, and basically determined the plan for environmental protection and improvement.

The treatment of sulphur dioxide pollution was realized mainly by further strengthening smelting techniques, for example, the use of oxygen enriched smelting to further increase the concentration of sulphur dioxide in the smoke, reducing the amount of smoke, and direct retrieval to manufacture acid. The problem of a high concentration of arsenic in the smoke was solved by scientific research and experiments using activated carbon adsorption and by further perfecting the flow process of the dry method in manufacturing acid. We built a project to recover low concentrations of sulphur dioxide and completely recovered smoke with a low concentration of sulphur dioxide from the tail gas produced by the lead smelting system and in acid manufacturing. The treatment of sewage was done mainly using the neutralization method. First level treatment was completed in each shop, i.e., after purification reached the criteria for release, second level treatment by the plant satisfied the standards for ground surface water. The comprehensive utilization of waste slag, i.e., the furnace slag from the lead blast furnace was done by using the technique of the smoke-making furnace. At present, the project has been basically determined, and some parts are being built. It is expected that by 1985, pollution of the smelting plant will be basically treated.

Using many ways to gather capital and to develop the use of capital as much as possible are also an important link in selecting the most economical plan to prevent and control pollution. Our methods were: One was to combine funds for major repairs of the enterprise, funds for renovation and improvement and profits from treating the three wastes. We broke away from the past frame of mind of following the same methods. We utilized the annual opportunity for major repairs to implement the principle of "major repairs and major improvements, small repairs and small improvements, and improvements whenever repairs are done," and carried out improvements according to plan and in an organized manner. The second was to use environmental protection to stimulate comprehensive utilization and to use comprehensive utilization to assure environmental protection. Just by retrieving sulphur dioxide to manufacture acid alone realized an income of nearly 4 million yuan, providing funds for further treatment of other types of pollution.

IV. The Fundamental Problem Is in Strengthening Leadership and Mobilizing the Masses

In strengthening leadership and mobilizing the masses, we should stress five links.

First, we must emphasize the implementation of the political line, the organizational line and the ideological line of our party since the Third Plenum of the 11th Party Congress. Enterprises should regard the prevention and control of pollution and environmental protection as important tasks in realizing modernization. Thoughts must be liberated in work; the policies of the party must be implemented in organization. All active factors must be fully mobilized. Joint efforts must be carried out to realize the goal of "a blue sky and clear water, and efficient production."

The second is to stress the implementation of the state's environmental protection law and related regulations of the local governments. We should launch propaganda and educational activities in environmental protection in depth so that every worker will protect the environment by following and abiding by the law.

Third, we must draw up plans and act in unison. The plant has a five-year plan and an eight-year long-range plan; it also has concrete annual plans. After the plans have been passed by the worker representatives conference, each unit must conscientiously carry them out.

Fourth, we must emphasize the environmental protection responsibility system and link it with the economic responsibility system. The enterprises should include environmental protection as a major content when implementing the economic responsibility system and launching labor competition. Those who contribute to environmental protection must be rewarded and those who pollute must be punished.

Fifth, we should concentrate on organizational leadership and technical leadership. The main leaders of the units subordinate to the plant should emphasize environmental protection themselves. The environmental protection engineers of the plant's environmental protection office and the units subordinate to the plant and other engineers and technicians should personally go to the shops and the shifts, concretely organize and guide the prevention and control of pollution and environmental protection work.

The above introduced some of the methods and experience of the Shenyang Smelting Plant in preventing and controlling pollution and in environmental protection. Generally speaking, they are the following: A heavily polluting enterprise that wants to protect the environment well should be self-reliant, make renovations and improvements, combine management and control, pay attention to practical results, and use the most economical plan to prevent and control pollution. This can unify environmental results and economic gain. Concrete results and progress realized over the past several years are listed in the following table.

Achievements and Progress in Environmental Protection Realized by the Shenyang Smelting Plant

Major Indicators	Unit of Measure	1977	1978	1979	1980	1981
Amount of SO released	ton	74,200	67,000	50,000	36,000	34,500
Total amount of dust released	ton		2,016	1,334	1,100	1,064
Amount of dust falling in plant area	ton/square kilometer·month			60	35	47
Amount of sewage released	ton/day	31,000	25,500	21,400	15,590	11,300
Amount of arsenic and heavy metals carried away by sewage	ton		377	336	175	15
Amount of sulphuric acid produced	ton	63,000	75,800	88,500	113,600	111,834
Sulphur's comprehensive utilization	%	36.0	46.3	54.0	65.3	66.3
Comprehensive utilization of valuable elements	%	33.0	44.5	52.9	61.5	63.0
Rate of utilization of resources	%	68.0			82.0	83.5
Rate of utilization of recycled water	%	31.4	43.8	55.7	75.5	80
Rate of utilization of energy	%	21.6			29.3	31.6
Percentage of good equipment	%	85.7	89.6	90.3	89.5	91
Percentage of areas that can be greened	%			20.0	50.0	72.7
Total value of industrial production	10,000 yuan	40,502	47,866	50,376	55,342	53,825
Net production value	10,000 yuan	5,652	6,817	8,387	9,684	9,647
Profits realized	10,000 yuan	2,270	3,255	4,305	5,332	5,416

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SHANGHAI STEPS UP POLLUTION-CONTROL EFFORTS

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[Text] Shanghai, 11 October (XINHUA)--The Shanghai Municipal Government has ordered 662 factories to control all their industrial pollution within eight years, according to the Municipal Environmental Protection Bureau. These factories include old paper mills, tanneries, electroplating factories and printing and dyeing mills. The order is part of a plan for China's largest industrial city to control pollution under the "Environmental Protection Law."

By 1985, the center of the city proper is expected to be free from smoke pollution and the average noise level cut by three decibels. Pollutant content in waste water discharged by factories along the city's Huangpu River is scheduled to be reduced below the required level by 1990.

Since enactment of the "Environmental Protection Law" in 1979, the spokesman said, the bureau has charged some factories and warned 150 others to control pollution by a given time.

The municipal government has allocated 100 million yuan to help factories control pollution, he said. As a result, Shanghai's waste water treatment capacity rose 51 percent over that of 1980, following the installation of about 1,000 treatment units in factories.

In addition, almost no black smoke is now discharged in the urban area by boilers with a capacity exceeding one ton. Installation of central heating systems in 70 factories reduced the chimney number by 50. Nine of the 17 metallurgical furnaces and plants discharging clouds of yellow smoke have been brought under control, the spokesman said.

Over the past four years, for example, the Shanghai Oil Refinery has spent 12 million yuan on pollution control, 38 percent of which was allocated by the government as a result of technological revamping. The refinery now treats 99 percent of its waste gas and 98 percent of its waste water. Four years ago, the refinery discharged an average of 300,000 tons of oily water and 20 kinds of harmful gases daily.

While controlling pollution caused by existing factories, the spokesman said, the Municipal Environmental Protection Bureau takes measures to prevent additional pollution from new, expanded or rebuilt factories. The bureau ensured that 5.9 percent of 2.9 billion yuan invested in 1,800 construction projects from 1977 to 1981 was spent on pollution control. This has permitted installation of pollution control facilities along with construction of the principal parts of these projects, he said.

CSO: 5000/4107

SHANGHAI STEEL MILL NO 3 HALTS PRODUCTION TO INTALL ANTI-POLLUTION EQUIPMENT

Shanghai WEN HUI BAO in Chinese, 30 May 82 p 1

[Article by Zhang Debao [1728 1795 1405]

(Editor's Note): It is summer, and some factories in the metropolitan area which had not been able to control the discharge of pollutants have been facing mounting resentment of the area residents. The Shanghai Steel Mill No 3 has decided to stop production to install anti-pollution equipment and resolved to look for other means to recoup the losses thus sustained. The residents of the Zhoujiadu area have also come forward like responsible proprietors to help the mill control the discharge of pollutants. Their spirit of voluntary help is indeed praiseworthy.

[Text] To control environmnetal pollution near Zhoujiadu, Pudong, the municipal Bureau of Metallurgical Industry has given the Shanghai Steel Mill No 3 approval to stop its smelting furnace to install anti-pollutant equipment, and the residents of the factory zone, motivated by their concern for the interests of all, are supporting the mill to improve environmental quality and develop production.

The open-hearth furnace workshop of the Shanghai Steel Mill No 3, one of the oldest in the area, was built in 1914. Since the introduction of oxygen steelmaking in the 1970's, its annual output has gone from 200 thousand tons to 500 thousand tons. Handicapped by the restrictive layout of the original plant construction, parts of its manufacturing facilities have spread to the boundary lines of the factory zone, and the pollutants discharged during operation, especially smoke and dust from its smelting furnace, have become an environmental hazard to the nearby residents. The municipal Bureau of Metallurgical Industry has decided to set aside more than 2 million yuan to install anti-pollutant equipment to eliminate the dust from smelting in the open-hearth furnace workshop.

In view of increasing production tasks undertaken by the metallurgical industry of the city, the Shanghai Steel Mill No 3 realized the discharge of pollutants would increase if it goes ahead as planned to install the antipollution equipment while production goes on as usual. After careful consideration by the local authorities and the mill, it decided with the approval of the higher authorities, to stop smelting when it installs the anti-pollution equipment so that no pollutants would be discharged to disrupt the lives of the residents.

The stoppage of production will cut down steel production by more than 20,000 tons. Unwilling to let the state sustain such losses on the one hand and to disrupt the lives of residents on the other, the staff and workers of the Shanghai Steel Mill No 3 are ready to do their best to recoup the loss of steel production sustained by stopping production.

To work with and support the mill in its anti-pollution efforts, the people's government of the Nanshi area and the responsible cadres of the streets of Zhoujiadu have launched recurrent propaganda drives among the residents and circulated printed propaganda material in the area. The residents close to the factory zone are also very supportive of the anti-pollution measures of the mill. Some residents who once proposed removing the plant, due to the instructive propaganda, realize now that the incident ought to be handled more reasonably. They are convinced that coordinated planning for urban improvement would benefit the state, the collective and the individual, and that since the mill has stopped production to control the pollutants and improve the environment for the good of the residents, they should support the mill to control pollution and develop production.

Now, the Shanghai Steel Mill No 3 has shipped in the anti-pollution equipment for the smelting furnace in the open-hearth workshop and began construction work outside the factory. The installation of the equipment will begin in the latter part of the month and be completed in about one month.

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CSO: 5000/4049

SHAANXI DEFENSE INDUSTRIES WIN HIGH MARKS IN ENVIRONMENTAL PROTECTION

Xi'an SHAANXI RIBAO in Chinese, 24 May 82 p 1

[Article by Wang Chao [3769 6389], Wang Hongying [3769 7703 7751], and Ren Shide [0117 0013 1795]:

[Text] In tightening up pollution controls and concentrating on resolving certain specific problems of pollution, the national defense industrial complex in Shaanxi has achieved remarkable successes in improving environmental quality and enhancing culture and production.

Aided by their study of the "Environmental Protection Law" and the "Decision" of the State Council on strengthening environmental protection, the staff and workers of the national defense industrial complex have voluntarily incorporated environmental protection with social construction, and set out to teach the masses to make it "an honor to protect the environment." All its component parts, including its subordinate bureaus and enterprises, have succeeded in making the organization, personnel, funding and planning of their environmental protection work practicable. Many units have worked out realistic pollution control rules, including supervision and testing, levy of fees for exceeding established limits, and environmental protection files. Other units have even set up special organs for environmental supervision and surveying.

The complex sets aside funds earmarked exclusively for pollution control, making adequate funding of the work a top priority. There are units which use the capital they raise to finance pollution control before everything else. According to tentative statistical reports of 76 units, they have invested over 23.6 million yuan to treat the "three wastes" during the last 4 years. Last year all the departments of the Third Ministry of Machine Building were able to raise over 87 percent of the total investment in the facilities for treating the "three wastes." In recent years, the Northwest Machine Factory has been setting aside each year a sum of 100,000 yuan out of its funds for innovations to control pollution and beautify the plant. With its level of smoke and dust discharge below the limits set by the state and with more than 70 percent of factory zone covered with greenery, it has become known as a "garden factory." The Dongfeng Machine Factory has been named by the local city people's government as the cleanest factory in the city.

Making the treatment of the "three wastes" the key to environmental protection, the national defense industrial complex has launched an extensive drive for technological improvement and innovation and to conserve energy and natural resources in order to control the discharge of the "three wastes." According to statistics covering the major plants, comparing 1981 with 1977, the amount of sewage discharge decreased 27.7 percent, waste gas decreased 59.7 percent an waste resudue decreased 3.15 percent. The excess gas discharged by the Shaanxi Diesel Machine Factory which used to pollute the air in the neighborhood is fully utilized now to eliminate pollution and to provide gas for household use by the staff and workers of the plant.

The industrial complex has been successful in treating within set time limits the most serious pollution items one by one. It also worked with the provincial environmental protection department and other related agencies to run a general inspection of its projects listed under the first national, provincial and municipal programs of pollution control within specified time limit and other key pollution control units. Of the 25 projects of pollution control within the time limit set by the state, 22 were able to meet the deadline. The Qinghua Electrical Appliances Plant was able not only to complete its 7 projects of pollution control within the time limit set by the state but also 8 other projects. These have improved the environmental quality considerably.

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CSO: 5000/4057

PETROCHEMICAL PLANT CONCENTRATES ON ENVIRONMENTAL PROTECTION

Guangzhou GUANGZHOU RIBAO in Chinese 12 Jun 82 p 2

[Article by Chen Lu [7115 2924] and Dai Rensheng [2071 0088 0581]]

[Text] The Guangzhou Petrochemical Plant was commended not long ago by the provincial environmental protection office for its success in treating the "three wastes" and protecting the environment by recycling its waste residue, waste gas and waste water to reuse energy and by-products. The petrochemical plant, as designed, was expected to discharge during operation an annual total of 800 million cubic meters of harmful carbon monoxide, 17.22 million tons of industrial and household sewage, and 22,400 tons of waste residue. If these "three wastes" were not treated, they would lead to serious environmental pollution harmful to the health of the masses. To turn waste into valuabe products, the plant not long after it started production began to recycle all the harmful sulphide discharged by its vacuum distillation facilities and use it as fuel in its heating furnace. This not only cuts down pollution and eliminates offensive odors, but also recaptures gas equivalent to more than 4,000 tons of fuel oil per year. Now, the plant is capable of treating all its harmful gas and waste residues, and still keep the waste gas discharged during the treatment within the limits set by the state. Its treatment of industrial sewage has for the most part reached the standard prescribed by the state. Lately, a test conducted by a higher environmental protection supervision agency attests that the groundwater at the plant contains no noticeable pollutants, and the atmosphere at and near the plant has been healthful. For more than 3 years, the plant has recaptured from its waste residues, waste gas and waste water, 33,400 tons of fuel oil, 6,560 tons of polluted oil, 3,032 tons of sulphur, 689 tons of sodium carbonate, 150 tons of cylic alkyl acid and 14,000 tons of fuel gas. These are worth 3,792,000 yuan, a feat which combines economic and environmental protection benefits.

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CSO: 5000/4054

DISRUPTION OF ECOLOGICAL BALANCE OPENS DOOR FOR ENCROACHING DESERT

Beijing DIQIU [EARTH] in Chinese No 3, 1982 pp 6-7

[Article by Wang Wufeng [3769 2976 1496]: The Destruction of Ecological Balance]

[Text] Ecological balance is the natural system of ecological distribution of all the living things in nature. Any disruption of this natural ecological distribution would set in motion a series of devastating responses. For instance, destruction of the forest resources of a region would affect its climate and water supply, causing soil erosion and possible destruction of wild animals. Vegetation is a lever for maintaining ecological balance and a natural agent for water and soil conservation. Its destruction could lead to grave consequences. The area of the world's forests has shrunk in the past 120 years from 7.6 billion hectares to 2.6 billion hectares, causing an average annual loss of 2.4 billion tons of soil. China is poor in forest resources, ranking 120th in the world. Due to extensive cutting and destruction of vegetation year after year, we lose an average of 5 billion tons of soil every year. Sichuan, known as "the land of abundance," is rich in forest resources (ranking second in China) which serves as a "green great wall" to guard the climatic and hydrological environment and to conserve water and soil.

Extensive felling and the destruction of the virgin forest zones in Sichuan during the last couple of decades have led to severe loss of water and soil erosion which covers 20 percent of the Chang jiang basin and represents 2.4 billion tons of eroded soil. As a lever for maintaining ecological balances, vegetation has contributed to the natural ecological balance in the northwest and northeast of China where there are 3.3 billion mou of grassland, enough to feed 25 million head of cattle. But due to severe destruction, there are 1 billion mou of grassland facing degeneration, desertization and alkalization, causing a decline in livestock production and in the development of animal husbandry.

The disruption of ecological balance has led to ever worsening desertization and alkalization of soil. 6 million hectares, or 90 million mou of arable land is being lost to the desert every year. China is a country with extensive deserts. The area of the deserts has increased by 1.9 billion mou in the last

30 years. There are about 1 billion mou of arable land threatened by desertization and another million mou threatened by varying degrees of alkalization. Today, the threat of desertization is so serious that the United Nations has even marked out Beijing, the capital, as a region threatened by desertization.

The Consequences of Large-scale Industrialization

The speedy development of science and technology and the spectacular growth of large-scale modern industrial production have given rise to a rapid increase of urban population and the emergence of new cities and transportation facilities. But they have also led mankind to face many insurmountable problems, especially extensive occupation of farmland by industry and environmental pollution, a new threat to land resources. According to statistical reports, the capital urban industrial and transportation construction in China during the two decades between 1958 and 1978 has taken over 500 million mou of farmland, a 25 million mou cutback in area per year, or an annual loss of farmland equal to the area of arable land of Zhejiang Province, this is very serious even in a capitalist country. In the United States for example, the land used for capital urban industrial and transportation facilities is 31.9 percent of the total land area of the whole country, or 2.98 million square kilometers, an equivalent of 4.47 billion mou. To resolve the contradiction between land for urban transportation, industry and mining on the one hand and the land for agriculture on the other will no doubt be the most critical issue in the future of urban industrial and transportation development.

The rapid development of large-scale modern industry has seriously polluted the environment; the land, the air and food has been polluted. According to statistics, we discharge over 70 million tons of industrial sewage per day, 95 percent of which empty into the rivers, lakes and the sea without treatment, causing water pollution. The use of polluted water for irrigating farm crops leads to food poisoning. For instance, some 6 thousand mou of farmland in the Shenyang and Fushun irrigation zone, Liaoning Province, are polluted by industrial waste water. As a result, the rice produced there contains 2.6mg/kg of cadmium. In Japan, any locality which produces crops containing over 1mg/kg of cadmium is prohibited by law to grow grains because grain which contains 1.41mg/kg of cadmium would cause bone disease, a serious health hazard. In short, there are as many causes for the crisis in land resources as there are solutions to the problem. As long as we all pay close attention to the problem, man will be able to find a way to resolve it.

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CSO: 5000/4057

COMMENTARY BEMOANS UNRESTRICTED DEPLETION OF FORESTRY RESOURCES

Beijing GUANGMING RIBAO in Chinese, 17 Jun 82 p 1

[Text] Since the latter part of last year, the destructive practice of random felling of trees and unlawful occupation of state and collectively owned wooded mountains have resurfaced in certain localities. Why do these evil practices resurface or even persist in some localities? The crucial point is that the major programs, policies, regulations, and measures on developing forestry have not been fully implemented and the cadres and masses do not have an ideologically correct understanding of the problem. The leadership of some localities and departments concerned is so weak that it hesitates to tackle and clamp down on unlawful destruction of forests. If these problems remain unresolved, the current random felling of trees will continue and may very well lead to more extensive destruction. The leadership at all levels should pay close attention to the situation. Poorly endowed with forests as China is, unrestricted felling of trees all these years has drained our vitality. Up till now, not much has been done to arrest the depletion of forest resources in many areas. If this continues, it will threaten the Four Modernizations and endanger the interests of future generations. The most urgent task right now is to protect, restore and develop forestry.

It takes a variety of coordinated measures to uproot the current evil practice of random felling of trees and to restore order and stability in the forest zones. The most urgent matter is to stop the evil practice of random felling of trees in some localities. All localities should launch extensive propaganda campaigns to drive home the importance of protecting and developing forestry, and to publicize the forestry policy and regulations of the state. Work continually to implement the "three assigned quotas" for forestry and resolve the problem of authority, responsibility and interests. Investigate and punish those cadres who tolerate, support and lead the destruction of forests, and violate the law they are expected to enforce. Punish those criminally liable in accordance with the law. Mobilize the masses to form forest protection teams and sign forest protection covenants. Reward any advanced unit or individual who loves and protects the forests, criticize selfish and unlawful destruction of forests, make it an honor to love and protect the forests, and a disgrace to destroy them unlawfully.

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CSO: 5000/4053

MINISTRY OF FORESTRY HOLDS MEETING TO STUDY RANDOM DEFORESTATION

Beijing GUANGMING RIBAO in Chinese, 17 Jun 82 p 1

[Text] A meeting of the representatives of the forestry departments (bureaus) of eight provinces and regions, including Guizhou, Yunnan, Guangdong, Guangxi, Hunan, Fujian, Jiangxi, and Zhenjiang, was held 8-11 June by the Ministry of Forestry to study random felling of trees in some localities and the ways to prevent it.

All those at the eight-province meeting felt that the "emergency Circular on Checking Random Felling of Trees"issued on 5 December 1980 by the State Council and the "Decision on Protecting and Developing Forestry" issued on 8 March 1981 by the Chinese Communist Party Central Committee and the State Council have alerted all localities and basically put an end to the random felling of trees throughout China. But the practice has resurfaced since the latter part of 1981, and the situation has become quite serious in a small number of localities. Many collectively owned forests have been completely cut down and divided up, large areas of state owned forests have been occupied and destroyed by neighboring communes, production brigades and the masses. In Huaihua, Hunan, 33 thousand cubic meters of lumber and 28 thousand bamboo trees have been cut down since the beginning of this year. In Chunan, Zhejiang, there were 106 instances of reckless felling of trees, totalling 9900 cubic meters of lumber, between January 1981 to April of this year. There were 198 cases of random felling of trees in Wengan county, Guizhou, where some production brigades have deforested practically all the wooded mountains. Last year in Guangxi over 400 thousand mou of wooded mountains in 152 state-run tree farms were occupied, raided and deforested, injuring over 180 forest maintenance crew and police. Over 15 thousand mou of China fir in the Lianghua state-run tree farm in Guangdong have been felled and stolen in recent years by neighboring communes, production brigades and the masses, a loss of 45 thousand cubic meters of fir. The free lumber markets in many forest zones once shut down are in business again to trade and smuggle private lumber. The 20 free lumber markets in Taizhou, Zhejiang, handled the sale of 37 thousand cubic meters of lumber in 1981. The violent seizure of state owned lumber has been prevalent. Representatives at the meeting have studied the causes of random felling of trees in certain localities and have worked out concrete measures to bring it to an end.

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CSO: 5000/4057

YUNNAN DESIGNATES JUNE AS TREE-PLANTING MONTH

Kunming YUNNAN RIBAO in Chinese, 2 Jun 82 p 1

[Text] In view of the natural climatic conditions of Yunnan, the resolution of the 12th session of the Standing Committee of the Provincial People's Congress which met in the spring this year to designate June as the "Tree-Planting Month" is wise and conductive to better afforestation. Now, as Yunnan begins to observe its first tree-planting month, all the localities must carry out resolutely the instructions on afforestation issued by the State Council and those by the provincial party committee and the provincial people's government, and do their utmost to make the first "Tree-Planting Month" a success.

Propaganda and education work must be carried out conscientiously. First of all, launch an intensive propaganda drive based on the successes and failures of the past to drive home the importance and urgency of afforestation. Make the cadres and the masses of all the nationalities see in terms of personal interest that the best way to bring prosperity to the peasants, especially peasants of the mountainous regions, is to develop forestry and turn the natural potentials of the province favorable to the development of forestry into economic gains. Foster the enthusiasm of the people of Yunnan to promote afforestation and bring into play the traditional virtue of loving and caring for forestry. Furthermore, extensive propaganda is needed to explain that the choice of June as the "Tree-Planting Month" is based on the climate of the province. "Young trees have a better chance of survival in the rainy season, don't let the opportunity slip away. "Trees planted in the summer have a higher survival rate than those planted in the spring. People of all nationalities in Yunnan, both young and old, workers, peasants, soldiers, intellectuals and merchants in both urban and rural areas, should be informed that June is "tree-planting month," and they should take part in the drive to plant trees in an enthusiastic, conscientious and organized manner.

Those localities still lagging behind in afforestation should carry out on time what has been planned. Get the seeds, seedlings and saplings ready and properly distributed to make every individual and every grassroot until braced for tree-planting so as to accomplish fully or substantially the whole year's task during the rainy season. Strive for results and quality of afforestation instead of window-dressing formalities, strengthen inspection and responsible management, and prevent as much loss as possible to raise the rate of survival. The weather this year has been abnormal, lack of seasonable rainfall may delay tree-planting in some localities; this could lead to conflicts between afforestation and farming. Proper scheduling should be worked out to accommodate both.

As we press for afforestation, we must also stop deforestation and random felling of trees for reclamation. "The two systems of full responsibility" had moved so fast in certain localities that forestry management was unable to keep pace. The "three assigned quotas" for forestry misunderstood by the masses in some localities has led to a new wave of raids on state forests and deforestation for reclamation. The most effective way to do away with random felling of trees and deforestation for reclamation is to carry out resolutely the instructions given in the circular of the provincial party committee. Investigate and resolve each case in all earnest, and punish the offenders in accordance with the law; let the law control forestry. All those localities which have established the "three assigned quotas" for forestry should resolve all other remaining problems in order to clarify the policy and win firm public support. After the busy planting season, all party and government agencies at the county level should organize vigorous work teams to assist the communes and production brigades of those localities which have not yet begun the system to get it established. The program must reach the specified quality and quantity within the current year as required by the circular of the provincial party committee.

Tree-planting, forest protection and full afforestation by the people is a long-term construction program which requires perseverance and scientitic approach. Now it is June. The leading party and government agencies should promptly plan for mobilization, execution and inspection of the afforestation activities in Yunnan and do everything possible to make the first tree-planting month a success.

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CSO: 5000/4057

YUNNAN PROVINCIAL PARTY COMMITTEE ISSUES CIRCULAR ON PROTECTING FORESTS

Kunming YUNNAN RIBAO in Chinese, 27 May 82 p 1

[Text] In its recently issued circular on "The Protection of Forests and Prevention of the Destruction of Forests for Reclamation," the Chinese Communist Yunnan Provincial Party Committee asked all the localities, including prefecture, city and county party committees, and the party organs of all related departments to investigate the implementation of the directives on protecting forests, preventing the destruction of forests for reclamation and to check further destruction of forests.

The circular states that in spite of what Yunnan had accomplished in enforcing the "Forest Law" and the directives on protecting and developing forests and on preventing the destruction of forests for reclamation issued by the Party Central Committe, the State Council, the provincial party committee and the provincial people's government, no thoroughgoing solution has yet been found to the problem of forest destruction. As reported by those in charge, the problem of destroying forests for reclamation still haunts certain localities. The leading comrade of the Party Central Committee therefore issued on 23 April a written directive to the leading comrade of the Yunnan provincial party committee that "only by persistent efforts could we resolve the problem of forest destruction." Another leading comrade of the Party Central Committee who had come to Yunnan to inspect party operations pointed out precisely that the most urgent task on hand is to stop further destruction of forests for reclamation. He reiterated again and again that the problem confronting forestry is quite serious and should be resolved realistically and effectively. Another leading comrade of the Party Central Committee who toured Yunnan also said that the problem of forestry ought to be resolved the sooner the better. The crucial issue, according to him, is the lack of a clarification of forest rights; once forest rights are resolved, all other problems relating to forestry would be easy to handle. Problems concerning felling of trees, afforestation and processing are all forest rights. He also discussed how to protect the forest resources of Xishuangbanna, and how to utilize and develop its natural potentials.

The circular states that the provincial party committee is of the opinion that to carry out the directives of the State Council and the instructions of leading comrade of the Party Central Committee, it is necessary to investigate how they have been implemented, sum up the experience, adopt even more effective measures, and work persistently until the problems are resolved. It asks for the following actions:

1. The party committees of all the localities, including prefecture, cities and counties, and the departments concerned, including the provincial department of forestry, must conduct thorough investigations on the implementation of the directives and policies on protecting and developing forestry issued by the Party Central Committee, the State Council, the provincial party committee and the provincial people's government; analyze the condition of forest destruction, sum up the experience, and adopt effective measures to resolve the problems as they are being investigated. Reward those who have done well; those who have failed to do well should be criticized and asked to make corrections within set time limits.

2. Act firmly to check destruction of forests for reclamation which is still in progress. Investigate case by case incidences of forest destruction and forest fires, and punish the offenders accordingly. Be resolved to prevent further destruction of forests for reclamation.

3. From the standpoint of existing conditions, a lot has to be done to establish the "three assigned quotas" for forestry. Therefore, the deadline for achieving the "three quotas" for forestry may be extended for better results. But the project must be completed this year according to the specifications laid down by the provincial party committee.

The circular also asks the departments concerned to study and come up with comments and specific proposals on how to conserve and develop the resources of Xishuangbanna.

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CSO: 5000/4057

EXTENSIVE AFFORESTATION CREATES MILDER CLIMATE, MORE RAINFALL

Lanzhou GANSU RIBAO in Chinese 14 Jun 82 p 4

[Article by He Guang [4421 0342]: "How Afforestation Has Changed Gansu's Climate"]

[Text] Can afforestation change the climate? There are many instances of improvement in the climate of some localities brought about by afforestation. The completion of the Xin'an River dam and the extension of afforestation to 39 percent of its drainage area between 1960 and 1972 have made the summers and winters milder, and there are now more frost-free days. The most spectacular change is the increase of rainfall in some areas, reaching an average annual of 100-120 mm. Linfen prefecture and Anze county in Shanxi have the most rainfall in the entire region because the afforested area has increased from the pre-Liberation coverage of 3.8 percent to 18 percent of their land area. On the other hand, there are certain localities where random deforestation has reduced the average rainfall and ushered in more arid climate. Due to a 20 percent reduction of the forested areas at Ziwuling in the north, there has been a marked decrease in the average annual rainfall in Zhengning county, Gansu.

Gansu is an inland province in the northwest far away from the sea and surrounded by mountains and plateaus not easily reached by humid oceanic airstreams, its climate has turned even more arid due to lack of forests and vegetation. As a result, the agriculture of the province is plagued by scarcity of rainfall and drought.

To what extent can large-scale afforestation increase the rainfall and improve the climate of Gansu? We know the rainfall of an area depends on the amount of moisture in the atmosphere, temperature, atmospheric circulation and topography. Afforestation can influence the temperature and the amount of moisture in the air, but has very little to do with atmospheric circulation and topography. According to estimates of meteorologists, if the sandy loess soil of the entire northwest were transformed by afforestation, the reflection from solar radiation would decrease 9 percent. Increased evaporation would raise the amount of moisture in the atmosphere. The average atmospheric temperature in summer would drop by 0.5 degree (more so near the earth surface), the average atmospheric temperature in winter would rise slightly, and increase the average annual rainfall by 176 mm (more so in summer time). Any change of climate due to afforestation, including lower temperature, higher humidity and more rainfall, would occur in the summertime, changes would not be so noticeable during the other seasons. Moreover, the increase of rainfall due to afforestation would vary from one locality to another, much less in more humid and arid regions, more in areas where the relative humidity is within the 50 percent range. What impact would these climatic changes have on different regions in Gansu? Let us take the central arid region as an example; the average summer rainfall in that region ranges from 102.1 mm at Jintai to 222.5 mm at Yuzhong. Even though the rainfall is still far below what summer crops require and droughts are common, the relative humidity, however, is within the 50-percent range. Complete afforestation of the region would increase its summer rainfall by more than 110 mm, or 50 to 100 percent, over its original amount of rainfall, the rainfall in most parts of the region would equal or exceed that of Longdong where agriculture fares the best in Gansu.

Consequently, even though complete afforestation cannot greatly alter the climate of Gansu, it would doubtless improve its climate and reduce the threat of drought to a certain extent.

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CSO: 5000/4057

PRC SCIENTISTS REFUTE LOP NUR'S GROWING ARIDITY

OW101439 Beijing XINHUA in English 1211 GMT 10 Sep 82

[Text] Urumqi, 10 September (XINHUA)--After undertaking three expeditions to the mystic, once-thriving city of Lop Nur in northwest China's Xinjiang Autonomous region, scientists are challenging the hypothesis that the weather in central Asia is getting continually drier. According to a report of the Xinjiang Branch of the Chinese Academy of Sciences, released here today, the weather in Lop Nur does not appear to become continually drier throughout the human period of history as formerly thought.

Nearly 100 scientists presented their findings at a recent symposium sponsored by the Xinjiang Branch of the academy. "This research is of both theoretical and practical significance to the study of changes in natural environments in dry regions and the development of human history in opening up deserts," said academy branch sources.

The scientists found that Lop Nur is not a shifting lake, a position held by some foreign geographers and geologists, but is actually at the lowest point accumulating run-off in the basin. They attribute the change in the size of the water body to the rechanneling of rivers.

Their study indicates that Lop Nur is one of the world's few habitats of wild camels, now a rare animal.

Located on the eastern brink of Tarim Basin, Lop Nur was the site of a thriving ancient state--Kroraina--more than 2,000 years ago.

Academy branch sources said that international scholars have for some time been interested in the geographical and morphological changes of Lop Nur, the cause of its degeneration and the law governing the ecological change in extremely barren land.

CSO: 5000/4106

TOURISTS' CASUAL DESTRUCTION OF NORTHERN NATURE PRESERVE ALARMS OFFICIALS

Beijing GUANGMING RIBAO in Chinese, 12 Jun 82 p 1

[Text] The Forestry Protection Division of the Ministry of Forestry produced evidence to show our reporter how seriously the world-famous Changbai Shan nature preserve has been damaged by tourists and why it is necessary to strengthen tourist administration. The Changbai Shan nature preserve located close to the northeastern border of China is a complete system and abounds in a great variety of wild animals and plants as well as tourist attractions. Last year, 40,000 tourists visited the preserve. However, due to unrestrained trampling, bathing and littering by tourists the parking lot near the hot spring has become a "dumping ground" strewn with empty cans, oil cakes, and soft drink bottles, destroying the natural community of the hot spring. The wild flowers at Butianshi have been plucked practically bare by the tourists. Unrestrained trampling by tourists have damaged the Changbai tundra, a treasure-house for studying the high altitude vegetation of the northeastern Asian continent. The parking lot at the hot spring, the arch bridge in front of the waterfall and the birch forests at Xiaotianchi are also damaged. The bedrock at several localities has become exposed due to erosion, looking very must like barren ground. As many as 65 kinds of valuable, rare and endangered species of plants have been damaged too, a setback for scientific research. Apart from the ignorance of the tourists, according to the Changbai Shan nature preserve administration, the major causes of this situation are poor administration, lack of necessary laws and regulations, and a defective administrative organization, the principal source of confusion. The Forestry Protection Division of the Ministry of Forestry believes it necessary to organize all related scientific and technical personnel to assess the impact of tourism on the natural environment of the Changbai Shan nature preserve in order to coordinate tourism and the protection of nature by means of effective measures backed up by legislation, planning and better management. All the animal and plant resources as well as natural scenic spots within the Changbai Shan nature preserve should be placed under centralized management by the Changbai Shan nature preserve administration whose approval shall be required for any other unit to operate within the zone. The management of all the tourist facilities constructed by other units in the preserve should be turned over to the Changbai Shan nature preserve administration.

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CSO: 5000/4057

ACADEMY OF SCIENCES CONVENES ENLARGED MEETING OF ENVIRONMENTAL SCIENCE COMMITTEE

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese No 3, 30 Jun 82 p 80

[Text] On 15 April 1982, the Chinese Academy of Sciences Environmental Science Committee called an enlarged meeting of committee members residing in Beijing at the time. Participants included committee chairman Li Su [2621 5685], deputy chairmen Ma Daxian [7456 1129 2009] Ma Shijun [7456 0013 7486], Guo Fang [6751 2455], committee members Wang Zunji [3769 6690 4787] Liu Qingyi [0491 7234 1355] Zhuang Yahui [8369 0068 6540] Chen Shupeng [7115 2611 1756] Li Songhua [2621 2646 5478] Hou Xueyu [0186 1331 3558] Tao Shiyan [7118 6108 6056]. Those who were invited to attend included Wang Yongsheng [3769 3057 0524] Wang Xianpu [3769 3759 3302] Sun Panshou [1327 4149 1108] Wu Wenyan [0702 2429 3601] Zhou Mingyu [0719 2494 3558[Zhou Houan [0719 0624 1344] Lin Daolin [2651 6670 3425] Huang Yinxiao [7806 6892 2556] Tan Jianan [6223 6015 1344] Teng Dexing [4910 1795 5281] etc.

During the meeting, Li Su reported briefly the condition of work in 1981 and his tentative opinions concerning the work arrangements for 1982. Since the First All Member Conference of the Environmental Science Committee held late 1980, the leadership of the scientific work has been strengthened to result in obvious progress of environmental science research at the academy. According to a preliminary statistical study of 18 research institutes [of the academy] more than 180 reports of research projects were completed in the year 1981. Among these, the intermediate experiment of the iodine-containing activated charcoal (8210 catalyst), the polychlorobenzene pollution survey, the establishment of analytical research method and standard materials, the proposal of regional noise standards of 6 types of urban functional regions, and the atlas of symptoms of plants damaged by atmospheric pollution are more valuable in terms of socioeconomic benefits and practical applications.

Important items of work in 1981:

Organization and coordination of environmental research for the region of Beijing, Tianjin, and Bohai Bay: The second Beijing, Tianjin, and Bohai Bay Environmental Science Work Conference was called. The plans and the needs were clarified to strengthen the study of regional and comprehensive environmental problems and to formulate rules regarding compilation, writing, and abstracting reports of research results.

Strengthening research in environmental sciences: The research project of the Taihu Lake regional environment of South Jiangsu, its ecosystem, and classification was proposed, to be organized by the Nanjing Branch of the academy. Environmental science teams were established at the Shanghai and Changchun Branches of the academy fo broaden scientific pursuits. A research plan to study the Beijing urban ecosystem was formulated. Studies on automatic monitor of environment and the information system were developed. With respect to environmental chemistry, attention was given to foreign language training of intermediate grade technicians and classes after-work for beginner grade technicians. The related institutes made selections of those to be sent to foreign countries for advance studies, work, or visits.

Long-range plans for developing environmental science: The Outline of Environmental Science Development Plan of the Academy in 1981-1990 (draft for the purpose of discussion) was proposed: the items and subjects of long range plans of national environmental protection science (the basic research portion) draft for the purpose of discussion) were tentatively put together.

Exchange of results on scientific research: From 1977 to 1980, there were 80 important projects of scientific and technological studies on environmental protection by the academy, nearly half of these results have been extended to produce benefits. The direction of the academy's environmental science information network and its responsibilities were clarified, the annual plan of environmental science information research was formulated. The conference on soil pollution chemistry was convened.

Major items of work for 1982: (1) Leadership of scientific research management is to be improved to strengthen scientific work, to utilize the advantage of the academy's multi-science capability, and to organize comprehensive and important environmental science research subjects for cooperative pursuit. (2) The work of organizing and coordinating comprehensive key subjects of scientific research is to continue. (3) Satisfactory assistance will be provided to evaluate environmental science research results outside the academy. Scientific research results of relatively great significance are to be given organized examination and certification.

The committee members and the invited delegates discussed the work of the environmental science committee. All agreed that in the past year a great deal of work had been performed to produce some accomplishments. The committee members suggested that the academy should strengthen its leadership regarding scientific research projects of a comprehensive and inter-science characteristic. The environmental science committee should be strengthened to take advantage of the various specialties of the academy for organizing the important scientific research jobs of environmental protection in the country.

Those in charge of the editorial department of HUANJING KEXUE delivered a report on the preparations for the scientific research report conference of environmental sciences. The plan was to convene an environmental science report conference during the second meeting of the academy's environmental science committee to be held in September of this year. This research report conference will be a review of the results of environmental science research of the academy in the past decade.

6248
CSO: 5000/4057

ENVIRONMENTAL SOCIETY CONFERENCE HELD IN PEOPLE'S HALL

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 3, 1982, p 31

[Article: "National Environmental Sciences Society Holds Spring Discussion Meeting"]

[Text] On the eve of the spring holidays of 1982, the China Environmental Sciences Society held a spring holiday discussion meeting in the West Wing of the People's Hall. A total of 95 people including renowned experts and scholars joined middle-aged and young people engaged in scientific research in environmental protection and management, educational workers and related workers to celebrate the new spring holiday together, to talk about the development of China's environmental protection work and to propose ideas on improving the environment.

The discussion meeting was presided over by Chen Xiping [7115 6007 1627], deputy director of the Environmental Office of the State Council and deputy chairman and Secretary General of the Environmental Sciences Society. Han Guang [7281 0342], director of the State Capital Construction Commission and deputy group leader of the leading group in environmental protection of the State Council, Pei Lisheng [5952 7787 3932], vice chairman of the China Science and Technology Association, Li Su [2621 5685], deputy director of the Department of Chemistry of the Chinese Academy of Sciences, attended and spoke at the meeting.

Comrade Han Guang greeted the comrades attending the discussion meeting and the comrades engaged in environmental protection work, wished them a good holiday season and talked to them on behalf of the leading group in environmental protection of the State Council and the State Capital Construction Commission. He pointed out in his talk that management of pollution must be emphasized as a major task. Today, the control of industrial pollution must be combined with comprehensive utilization. Technical improvement must be emphasized, at the same time, strong and forceful management and laws must be coordinated with efforts to solve the problem of environmental pollution.

Ma Dayou [7456 1129 3731], Zhao Zongyu [6392 1350 3603], Qu Zhongxiang [2575 0112 3276], Ma Shijun [7456 0013 7486], Liu Dongsheng [0491 2639 0581], Tao Baokai [7118 5508 2818], Gu Kangle [7357 1660 2867], Zeng Chengkui [2582 0701 1145], Hu Hangsheng [5170 5060 0581] et al respectively expressed their opinions concerning noise, energy resources, the ecology, the environment of our national territory, city traffic, water resources, oceans, and environmental medicine.

The discussion meeting was held in a happy atmosphere.

9296
CSO: 5000/4057

HEAVY METAL POLLUTION FOUND TO EXCEED U.S., JAPAN STANDARDS

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese No 3, 30 Jun 82 pp 9-13

[Article by Yang Jurong [2799 1446 2867] et. al., of the Department of Geography Beijing Teachers University: "Soil Pollution of Heavy Metals in Sludge and an Approach to Its Control"]

[Summary] Using the sludge of the Beijing Gaobeidian Sludge Treatment Plant as the test material, a small area experiment was carried out to study the state of the heavy metal content, its change after fermentation treatment, and its dynamic distribution in soil. Results indicate that the sludge is slightly alkaline, rich with plant nutrients of N, P, K, etc, as well as high and variable contents of many types of heavy metals, among which the content of Cd has exceeded the standard of the U.S.A. and that of Hg, Cu, Pb, and As exceeded the standard of Japanese sludge. Solubility of these heavy metals is found to be in the following order: CD>Cu>Zn>As>Pb>Hg. Most of the CD is soluble and exchangeable and may easily be absorbed by plants. Attention must therefore, be given to its pollution of soil and crops. After fermentation, soluble Hg, Cd contents increase obviously, those of Cu, Pb slightly, and there is no obvious change in Zn. Judging from soil leaching results, almost all Hg,Cd,Cu,Pb,As ions remain in brown soil while their transferability is higher in red earth. Under the current level of heavy metal densities in the sludge and the current limitation of 10,000 jin/mu application per year, the application of sludge to soil as fertilizer and irrigation water should be limited to 20 years. Of the present heavy metal contents, pollution from Cd is the most damaging. After heavy metals enter the soil, the soil condition changes and sometimes the soil balance is destroyed; therefore, there is a need for considering the total allowance.

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese No 3, 30 Jun 82 pp 13-18

[Article by Yang Dongzhen [2799 2639 6297] of the Central Weather Bureau Research Academy of Meteorological Sciences: "Diffusion of Fluorince Gases From the Factories Producing Phosphate Fertilizer on Hilly Lands"]

[Summary] For the purpose of providing a scientific basis for future revision of the standard of discharging harmful gases, the area of protection from the discharge, and the treatment measures, research studies and on-site monitor tests were carried out in 1978 in 3 phosphate plants in Hunan and Fujian Provinces. Plant A is located in a highland valley in southern Hunan; Plant B in the suburb of Fuzhou, about 1600 m to the southeast of mountains of 100-200 m in height; Plant C is located in a river valley, facing the 800 m wide water surface with 100 m mountains to the rear. Computation of the diffusion data indicates that due to the action of the terrain, the diffusion parameters of the 3 plants average twice as much as that of a flat region; the P-G stability classification is suitable. The Gauss model remains suitable. In case of unorganized origin of discharge, i.e., such sources as hot wind furnace, blast furnace, sintering site, etc, where harmful gases are discharged outside of a smokestack, some methods of calculating the intensity of the discharge are preliminarily suggested.

BENTHIC INVERTEBRATES STUDIES TO DETERMINE DEGREE OF POLLUTION IN GUANGZHOU

Beijing HUANJING KEXUE [JOURNAL OF ENVIRONMENTAL SCIENCE] in Chinese No 3, 30 Jun 82 pp 54-57

[Article by Qi Sang [2630 2718] et. al. of the Department of Biology, Jinan University: "Preliminary Evaluation of Water Pollution at Liwan District of Guangzhou City, Using Benthic Macroinvertebrates"]

[Summary] Liwan District is under the jurisdiction of Guangzhou City, being an area of 11.8 km^2 in the northwestern part of the city. There are more than 500 large and small factories, including cement plants, power generating plants, steel rolling mills, electroplating, construction material, chemical, food processing plants, etc. These factories discharge harmful liquid waste about 110,000 tons a day, in addition to the 80,000 tons of sewage discharged by the inhabitants of the district. Most of the wastewater is discharged into the nearby waters without effective treatment to result in serious pollution. In July 1979 and January 1980 (representing high and low water periods respectively) surveys are taken of the large benthic invertebrates of the waters of Liuhua, Liwan, Simayong, Wukouyong lakes and ponds, etc, being all parts of the Zhujiang River system. Silt samples are taken 2-3 times at each of these points, and are cleaned and analyzed to determine the water temperature, pH, dissolved oxygen, oxygen consumption, nitrous nitrogen, nitric nitrogen, organic phosphorus, organic chlorine, petroleum, volatile phenol, cyanide, mercury, lead, copper, zinc, cadmium, and chromium contents for computing the 3-month average water pollution indices. A total of 16 species of benthic invertebrates are observed. Based upon the multi-sample indices of these benthic invertebrates, the degree of pollution of the waters is evaluated and listed in the tables. In recent years, the Shannon-Weaver species multi-sample indices have been relatively commonly used in China for pollution ecology research. This equation is found by the authors to have both advantages and shortcomings. For example, at site No 1, the H' values are below 0 in both high and low water periods, not due to pollution, however, but due to the fact that the composition of species colony of that site is different from that of other sites. At site No 11, pollution is extremely severe and living things are totally nonexistent. This fact is not reflected in the H' value and a notation is necessary to describe this fact in words. More studies are needed, therefore, to find more ideal means of expression, the paper concludes.

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CSO: 5000/4057

KASCHI-BECK DISEASE FURTHER LINKED TO LOW LEVELS OF SELENIUM IN ENVIRONMENT

Dalian HUANJING KEXUE XUEBAO [ACTA SCIENTIAE CIRCUMSTANTIAE] in Chinese Vol 2 No 2, Jun 82 pp 91-101

[Article by Li Jiyun [2621 4949 0061] et. al., of the Northwestern Institute of Soil and Water Conservation, Chinese Academy of Sciences: "A study of Kaschi-Beck Disease Associated With Environmental Selenium in the Shaanxi Area"]

[Summary] In order to study Kaschi-Beck disease in relation to environmental selenium, the authors have collected samples of drinking water, soils, various kinds of grains, and children's hair from 130 locations in both affected and nonaffected areas according to different natural and geographical types in Shaanxi Province from 1978 to 1981, and also analyses of selenium were made in these samples. It can be seen from the results that the disease-affected areas all are of an environment where the selenium content stands very low, for example, in drinking water there are fewer than 0.2 ppb, in grains (average of wheat and corn) fewer than 10 ppb in over 95 percent of the samples examined, while in hair, which reflects Se content in the human body, there are fewer than 110 ppb in over 92 percent of 478 children. In contrast, the areas where no Kaschi-Beck disease has appeared are of an environment with low, medium and high Se content in water, soils and grains. The amount of Se provided for the children from water and grains has been calculated at 5.4 μg or so, with the lowest daily uptake in the nonaffected areas. It can also be shown by analyzing the results of the samples in all the locations that the amount of Se in grains consists of up to 90 percent of the total amount of Se in grains and water in most locations in the areas, and it has also indicated that grains are the main Se source in these areas. But in areas where Se content in grains is low and that in water is high, Se from water may make a bigger contribution to Se in the human body, and no Kaschi-Beck disease has so far been found there.

Preventive measures have been taken by periodic oral administration of sodium selenite (Se 1 mg/week) or salts with small amounts of sodium selenite (5 mg/kg). They have proven to be effective in raising the Se content in the hair of the children in the disease-affected areas.

Dalian HUANJING KEXUE XUEBAO [ACTA SCIENTIA CIRCUMSTANTIAE] in Chinese Vol 2 No 2, Jun 82 pp 143-149

[Article by Hu Rongmei [5170 2837 2734] et. al., of the Institute of Soil Science Chinese Academy of Sciences: "Study of Flourine Pollution in Soil in Baotou Region"]

[Summary] Fluorine pollution in the soil in the Baotou region has been studied and described. The distribution of soluble and total fluorine in the soil can in some way reflect the range and level of fluorine pollution in the air in that region. Atmospheric fluorine pollution in this region can hardly be compared with that caused by tail-ore dam, involving solid waste and wastewater from ore-dressing and ore-sintening plants which, according to data, are main sources. The accumulation rate of fluorine in soils downstream of the dam is very high, sometimes over 1 ton fluorine per ha per meter. Fluorine pollution in soil also causes contamination of groundwater and vegetables, that resulted in the relocation of the neighboring production units several years ago. It has become clear that it is not the fluorine pollution, but the soil fluorine pollution intensified tail-ore dam, which plays its part. In view of the serious impact made by the tail-ore dam on the environment, practical suggestions should be advanced to take preventive measures for extensive protection.

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CSO: 5000/4057

BRIEFS

NPC PASSES LAW--Beijing, 24 Aug (XINHUA)--It is hereby proclaimed that the "Marine Environmental Protection Law of the People's Republic of China" is adopted by the 24th Session of the Standing Committee of the 5th National People's Congress of the People's Republic of China on 23 August 1982 and that it be enforced as of 1 March 1983. [Decree No 9 issued by the Standing Committee of the Fifth National People's Congress of the People's Republic of China] [Text] [OW240338 Beijing XINHUA Domestic Service in Chinese 0116 GMT 24 Aug 82]

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END

JPRS 82324

26 November 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 379

JOINT PUBLICATIONS RESEARCH SERVICE
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JPRS 82324

26 November 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 379

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ATTORNEY GENERAL: CANBERRA CAN HALT TASMANIA DAM

Melbourne THE AGE in English 9 Oct 82 pp 1, 15

[Article by Simon Balderstone]

[Excerpts] Canberra--The Federal Government has international responsibilities to intervene to preserve south-west Tasmania, according to a legal opinion from the Attorney-General's Department.

The opinion says that the Federal Government has substantial constitutional powers that could be used to preserve the area and any decision not to intervene must therefore "be based on political grounds."

It says Australia has international obligations and responsibilities--set out in the World Heritage Convention--regarding "natural heritage" whether or not the property is included on the World Heritage List.

Amid growing public reaction against the dam scheme, the Department of Home Affairs and the Environment has been asked to prepare a detailed submission for Cabinet on the wilderness area and the dam proposal.

The legal opinion from the Attorney-General's department says Australia has clearly "identified and delineated" south-west Tasmania as part of its natural heritage by nominating the area for inclusion on the world list.

"I do not think that a party, having identified an area as part of its 'natural heritage,' can claim that it is no longer such an area simply because its preservation is politically difficult or expensive, or because it is an impediment to industrial works," says Mr D.J. Rose in the legal opinion.

He says the Commonwealth has wide constitutional powers and relevant statutory powers to intervene in south-west Tasmania, so it is unnecessary to consider external affairs powers.

The legal opinion, a copy of which has been seen by 'The Age,' was prepared after advice was requested concerning the Commonwealth's nomination of south-west Tasmania for inclusion in the world list. The list is established under the UNESCO convention for the protection of the world cultural and natural heritage.

The nomination was made on the recommendation of the former Tasmanian Labour Government headed by Mr Doug Lowe.

The present Premier, Mr Gray, has asked the Prime Minister to withdraw the nomination, but the Federal Government has stood firm, with Mr Fraser believed to have been angry over the request.

A study of the legal opinion reveals that Mr Gray sent a telex on 29 June referring to Tasmania's "sovereignty" and "autonomy" in the matter.

"Of course, such references are constitutionally incorrect. A State only has 'sovereignty' subject to the Commonwealth Constitution and therefore subject to any valid Commonwealth legislation," the legal opinion says.

"The Commonwealth has substantial constitutional powers that could be used to preserve south-west Tasmania; any decision to intervene must therefore be based on political grounds, not any constitutional impediments."

The opinion says that the reasons stated by Mr Gray in his 29 June telex (requesting withdrawal of the nomination) were clearly not grounds on which Australia could claim that the area is no longer part of the "natural heritage."

"It follows that the area has been identified by Australia as part of its natural heritage within the meaning of the convention and it would therefore seem impossible for Australia to deny that it is part of that heritage within the meaning of the convention and that it has international obligations under the convention in relation to it," the legal opinion says.

It says that, in addition to express constitutional powers, the Commonwealth has so-called "inherent power" to do "all things appropriate for a national Government."

Power already exists under the National Parks and Wildlife Conservation Act 195 to acquire the area as a Commonwealth National Park and the Lands Acquisition Act also provides the Commonwealth with relevant statutory powers.

It is constitutionally open to the Government to make grants to Tasmania for the purpose of financing alternative schemes of power generation," or even to make all grants to Tasmania conditional upon its not building a dam."

CSO: 5000/7510

NSW GOVERNMENT WANTS FIRM TO PAY FOR RADIOACTIVE CLEAN-UP

Canberra THE WEEKEND AUSTRALIAN in English 9-10 Oct 82 p 5

[Article by Pam Bornhorst]

[Text]

A LEGAL battle looms over the removal of tonnes of radioactive soil from the northern NSW coastal town of Byron Bay.

The contamination was revealed earlier this year after a Sydney University physicist, Dr Murray Winn, tested the local soil and found unacceptably high levels of radiation.

The Health Commission has since concluded contamination was caused by concentrations of the naturally radioactive mineral, monazite, which was in waste dumped during sand mining operations at Byron Bay between 1934 and 1975.

Radiation experts have already ordered the removal of radioactive soil from the local primary school and two areas near the centre of the town.

But surveys over the past six months have revealed unacceptable levels of radioactivity at a number of other locations, including 25 homes, the Baby Health Centre, the Girl Guides Hall, and the hospital.

The NSW Government wants the mining company responsible, Perth-based Associated Minerals Consolidated Limited (AMC), to pay the full cost of the clean-up, estimated at more than $750,000.

During a visit to Byron Bay yesterday, the NSW Minister for Health, Mr Brereton, described the situation as "totally unacceptable". He said the Government would take joint legal action with local citizens to force AMC to "fulfill its obligations"

Abandoned

If necessary, it would pursue the matter as far as the High Court.

Mr Brereton said people wanting to take separate legal action against AMC would be considered for legal aid by the Legal Services Commission for NSW.

The State Government announced yesterday it would not be closing down sections of the Byron Bay Hospital affected by radioactive waste. Instead, the contaminated material would be cleared at an initial cost of $50,000.

The Health Commission had recommended in the report earlier this year that some of the hospital's services be transferred to nearby Mullumbimby because of the radiation scare. Mr Brereton said this idea had been abandoned because the Government did not have the necessary funds.

Health authorities were alerted to the elevated radiation levels in the Byron Bay soil by an exclusive report in *The Australian* in January. The paper had been contacted by a former employee of the sand mining plant who was concerned about the dangers of the dumped waste.

AMC last night defended its offer to pay only a percentage of the cost of cleaning up.

The chairman of the company, Mr L.W. Skelton, said he was surprised and disappointed at Mr Brereton's response to the company's proposal, and his "threat of legal action".

The company had submitted the final proposal only yesterday, and Mr Brereton had indicated it was "worthy of consideration".

Mr Skelton said the sand mining operations were carried out in Byron Bay over a period of 40 years on a lease held by Zircon Rutile Pty Ltd, which was acquired by AMC in 1962, 13 years before mining ceased.

AMC believed most if not all the contamination occurred before the acquisition.

The company did not admit any liability but had agreed to clean up all affected areas which it "now occupies or had occupied." But it refuses to accept responsibility for areas owned, occupied or controlled by either the council or the Government.

The company says it is prepared to pay a third of the cost of clearing private homes.

CSO: 5000/7510

VICTORIAN GOVERNMENT REPORT OPENS DOOR TO WOODCHIP INDUSTRY

Melbourne THE AGE in English 11 Oct 82 p 5

[Article by Rosslyn Beeby]

[Text]

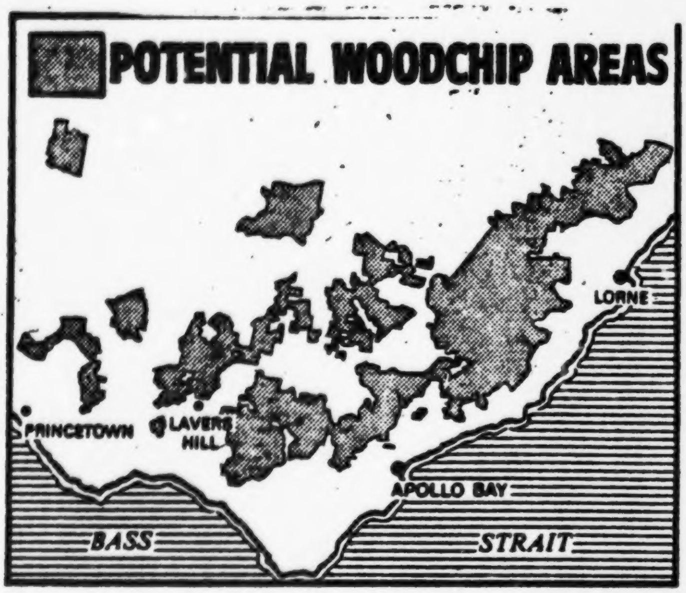
A State Government report has recommended that an export wood-chip industry be developed in the Otway Ranges.

The report says that 70,000 tonnes of pulp wood a year could be harvested for wood chips, using waste from existing sawlog operations. It estimates that the industry could be worth $4.5 million and create up to 70 local jobs.

The report also calls for stricter management controls on logging operations on public and private land, to protect wildlife and sites of geological, geomorphological and archaeological significance.

The State Government has previously voiced strong opposition to establishing a woodchip industry in the Otways. The Minister for Forests, Mr Mackenzie, announced a moratorium earlier this year on pulp-wood harvesting licences in the area, until a detailed economic and environmental effects assessment had been carried out.

Mr Mackenzie was unavailable for comment yesterday, but a spokesman for the Ministry said the report should not be viewed as Government policy. He said the Ministry was unlikely to make any decision to lift the Otway moratorium until early next year, when all public comment on the report had been considered.



The report, commissioned last December, was compiled by an inter-departmental task force chaired by the Ministry of Economic Development. It included representatives from the Forests Commission, Ministry of Water Resources and Supply, Ministry of Conservation, Department of Planning, Ministry of Tourism and the Soil Conservation Authority.

The task force was asked to examine the economic benefit of wood chipping in the Otways, the effect on water quality and quantity and the impact of timber production on the Otway State Forest.

The report concludes:

- Waste from saw log operations in mountain forests clearfelled for regeneration can be harvested with little enviromental impact if appropriate management practices are adopted.
- Harvesting of pulp wood in foothill forests potentially involved greater hazards to the environment and to water quality.
- The maximum quantity of pulp wood for an economically viable wood-chip operation would be 70,000 tonnes a year.
- The existing controls on private forestry in the Otways be amended and rationalised before pulp wood harvested is allowed on public land.

The report also suggests tighter management guidelines for wildlife protection, including creation of wildlife reserves, retention of hollow trees used for nesting, a series of comprehensive wildlife research programmes and the employment of wildlife biologists to advise forest management staff.

A spokesman for the Geelong Environment Council, Ms Joan Lindros, called the report "a bitter disappointment." She said it was clearly intended to open the way for a wood-chipping operation in the Otways. "The forests are already overcut and over-committed to make the extraction of saw logs economic. What we need is a change of philosophy in the management of the whole area."

"The average amount of residue from existing operations varies from 10,000 to 20,000 tonnes a year. If that rises to 70,000 tonnes the destructive impact on the forest will be so much greater."

The general manager of the Victorian Sawmillers' Association, Mr Tom Brabin, said he was pleased that the task force had seen merit in utilising rather than wastefully burning saw-logging and silviculture residue. But he said he was astounded at the assumption that pulp wood harvesting in foothill forests was environmentally hazardous.

"It is obvious that some members of this task force had preconceived ideas which they thrust down the throats of other members," he said.

CSO: 5000/7510

RADIOACTIVE SAND FOUND DUMPED IN BRISBANE SUBURBS' YARDS

Brisbane THE COURIER-MAIL in English 16 Oct 82 p 1

[Article by Peter Morley]

[Text] Truckloads of sand containing up to 10 times the acceptable radioactive safety level have been dumped in suburban Brisbane house yards.

And thousands of tonnes of the sand, waste from Queensland coastal rutile works, have been used throughout the south-east corner of the state for fill, top-dressing and construction.

On the Gold Coast, tests have shown that the radioactive level of land on the Currumbin Estuary where rutile was mined is double that recommended by the National Health and Medical Research Council.

This was confirmed last night by the Health Minister, Mr Austin, who said the public use of the potentially dangerous sand had come to light only this week as a result of Government investigations.

He said any person who suspected they had used the offending material should contact his department whose scientists would carry out checks, although this would take some time because of the expected number of requests.

Where positive findings were established, it would be the responsibility of the property owner to remove it.

The problem for the Government is that it has no idea where much of the sand waste has been dumped and over what time span. It may have been carted away from rutile works since they began operations 30 years ago.

And the half-life of the radioactive nuclides thorium-232 and its daughters which are contained in the tailings is about 10,000 million years.

Mr Austin said there was significant concern for public health because of the penetrating nature of the gamma radiation emittted by the nuclides and the emission of the radioactive gas Radon 220.

Departmental scientists had already identified several Brisbane properties where the sand was deposited, after owners sought checks when the Government investigation began.

"In a minority of these cases, the radiation levels for the property were significantly higher than the background radiation level in the immediate neighborhood," he said.

He confirmed that in Brisbane, some of the tests had shown a radioactive reading 10 times higher than the accepted safety level recommended by the council.

Mr Austin said the Brisbane results had shown up in an investigation he ordered 10 months ago after dangerously high radiation levels through sand mining were found at the Byron Bay Hospital in New South Wales.

"This survey has revealed there are areas of unacceptably high radio-activity in Queensland," he said.

[Editor's Note: THE WEEKEND AUSTRALIAN of 16-17 October 1982, page 3, carried this report:]

Dangerous levels of radioactivity have been found in the car park of a popular Gold Coast beach and in an industrial area of Maryborough, 350 km north of Brisbane.

Three "hot spots" where the radiation readings were twice the acceptable level were detected at Currumbin beach on the Gold Coast.

The car park was built on the site of a rutile extraction plant which operated for about 25 years until 1976.

The Queensland Minister for Health, Mr Austin, said health department scientists had identified a number of private residential properties where the radioactive sand had been deposited.

The Gold Coast City Council is checking Southport, Tugun and Broadbeach.

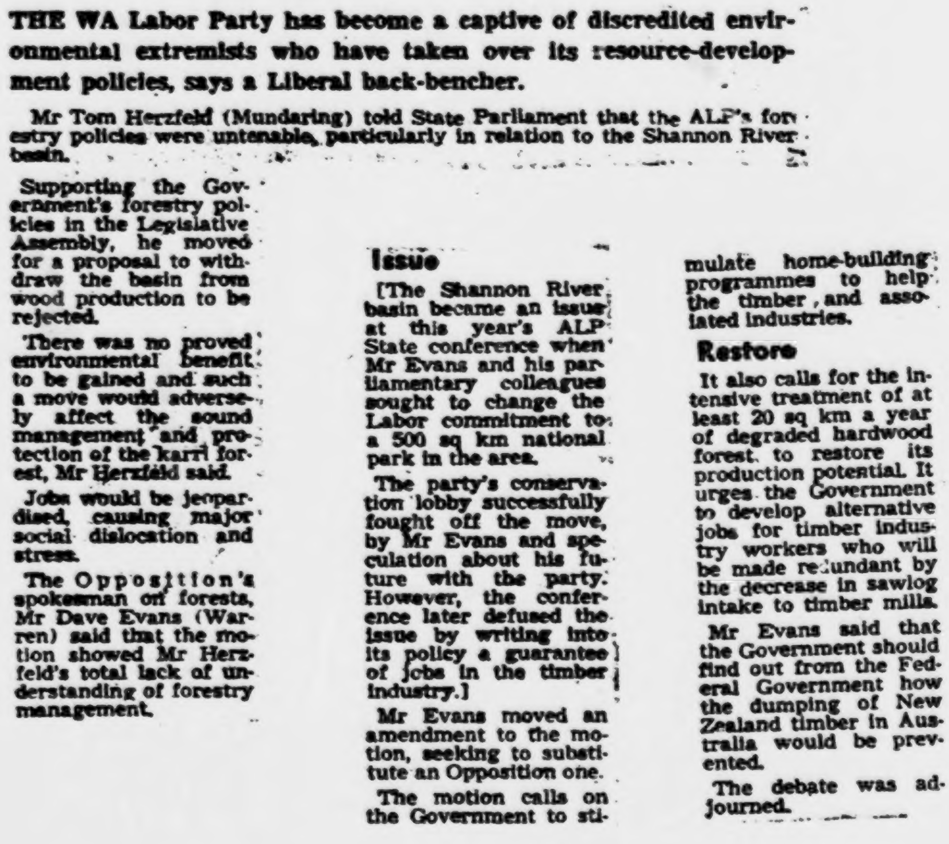
The radiation at Currumbin was found after a check was requested by a council alderman, Mr Trevor Coomber. Council bulldozers removed 95 meters of fill to the council dump which is closed to the public.

CSO: 5000/7510

WA LABOR PARTY SAID TO BE IN HANDS OF ENVIRONMENTALISTS

Perth THE WEST AUSTRALIAN in English 15 Oct 82 p 19

[Text]



THE WA Labor Party has become a captive of discredited environmental extremists who have taken over its resource-development policies, says a Liberal back-bencher.

Mr Tom Herzfeld (Mundaring) told State Parliament that the ALP's forestry policies were untenable, particularly in relation to the Shannon River basin.

Supporting the Government's forestry policies in the Legislative Assembly, he moved for a proposal to withdraw the basin from wood production to be rejected.

There was no proved environmental benefit to be gained and such a move would adversely affect the sound management and protection of the karri forest, Mr Herzfeld said.

Jobs would be jeopardised, causing major social dislocation and stress.

The Opposition's spokesman on forests, Mr Dave Evans (Warren) said that the motion showed Mr Herzfeld's total lack of understanding of forestry management.

Issue

[The Shannon River basin became an issue at this year's ALP State conference when Mr Evans and his parliamentary colleagues sought to change the Labor commitment to a 500 sq km national park in the area.

The party's conservation lobby successfully fought off the move, by Mr Evans and speculation about his future with the party. However, the conference later defused the issue by writing into its policy a guarantee of jobs in the timber industry.]

Mr Evans moved an amendment to the motion, seeking to substitute an Opposition one.

The motion calls on the Government to stimulate home-building programmes to help the timber, and associated industries.

Restore

It also calls for the intensive treatment of at least 20 sq km a year of degraded hardwood forest to restore its production potential. It urges the Government to develop alternative jobs for timber industry workers who will be made redundant by the decrease in sawlog intake to timber mills.

Mr Evans said that the Government should find out from the Federal Government how the dumping of New Zealand timber in Australia would be prevented.

The debate was adjourned.

CSO: 5000/7510

AUSTRALIA

BRIEFS

REEF OIL RISK STUDY--A priority study of the potential risks of oil spills on the Great Barrier Reef will be carried out at James Cook University at Townsville. This follows the release of Federal Government grants. The grants, for marine science research at the university, total $450,000 of which almost $70,000 will support the reef study. It will be based in the Sir George Fisher Centre for Tropical Marine Studies where a team of scientists will be led by the centre director, Dr Joe Baker. Dr Baker said yesterday the four-year project was one of the Federal Marine Sciences and Technologies Grants program's priority research areas. It had been given priority status in 1979 after a joint statement on oil drilling by the Prime Minister Mr Fraser and the Premier, Mr Bjelke-Petersen. The statement said there should be no drilling in the reef region until long and short-term research results were known. Dr Baker said researchers would not start the study with the view that oil could be harmful to the reef. "I don't think any researcher should assume the negative," he said. "In fact it may be found that small quantities of oil could be quite valuable to the reef's ecosystem. But that is something we have to determine." Tests in the centre would gauge the effect oil had on a variety of marine plants and animals, including coral, sponges and clams. [Text] [Brisbane THE COURIER-MAIL in English 7 Oct 82 p 5]

FIRST 'ENVIRONMENTAL LIVING' ZONE--Australia's first environmental living zone came into being yesterday. Some 580 hectares of bushland at the Bend of Islands on the Yarra River 35 kilometres from Melbourne were gazetted for "environmental living." The bushland, which has 60 human residents, a mob of grey kangaroos and a lot of smaller wildlife, will be kept in national park condition under the new zoning--but with people living in it. The new zoning, declared by the Planning Minister, Mr Walker, bans cats and dogs, plants foreign to the Yarra Valley, clearing of the bushland and subdivision into lots of less than 40 hectares. [Text] [Melbourne THE AGE in English 11 Oct 82 p 6]

AUTO EMISSION CONTROLS--The [Victorian] State Government yesterday introduced legislation to tighten EPA control of car emissions. The Environment (Air Pollution) Bill, introduced by the Minister for Conservation, Mr Walker, in the Upper House, seeks to make it an offence to manufacture, sell or use any vehicle which does not conform with prescribed emission standards; to use any vehicle not fitted with prescribed control equipment; and to sell or use a prohibited chemical substance. Mr Walker said tests had shown that there was a need for a much stronger enforcement programme. "The results from the EPA testing station at Altona show that more than 30 percent of new vehicles fail to comply with the standards, and about 60 percent of in-service vehicles also fail," Mr Walker said. He said the EPA would enforce checks on motor vehicle dealers by requiring them to present two new vehicles a year on request. As well, if EPA officers noticed a car on the road which they suspected of exceeding the emission limits, for example, through a smoking exhaust pipe, it could be checked. [Text] [Melbourne THE AGE in English 14 Oct 82 p 20]

TOXIC-WASTE DISPOSAL PLAN--Melbourne--An American incinerator ship has been invited here to dispose of a highly dangerous toxic waste. The Conservation Minister, Mr Walker, said yesterday that there was as much as 10 years' supply of a dangerous waste in corroded barrels in local private stores. It would be relief to dispose of the poly-chlorinated bi-phenyls. The visit of the ship Vulcanus had not been officially confirmed yet but was expected to visit on November 22. Permission for the visit must come from the Federal Home Affairs and Environment Department. Mr Walker said that about 85,000 litres of PCB was being inadequately stored in Victoria. The ship would take the waste to sea and burn it. The Vulcanus was originally invited here by two companies, ICI and B.F. Goodrich, to dispose of stockpiles of hydrocarbon waste. But the Government believes that it will be a good opportunity to dispose of the PCB. Companies will be invited to dispose of their stockpiles. PCB is used mainly in industries that make or use transformers. [Text] [Perth THE WEST AUSTRALIAN in English 14 Oct 82 p 4]

SOIL CONSERVATION POLICY--Tax laws should be amended to provide for all soil-conservation work, according to a national group this week. The Australian Standing Committee on Soil Conservation is in Perth for its 46th meeting. The group will return to the city tomorrow after spending three days in country areas with soil problems. The Minister for Primary Industry, Mr Old, said that the committee had resolved to recommend to the Agricultural Council that the law be amended. "Current concessions appear to apply to actions on degraded or degrading land, but action on adjacent land to prevent erosion does not appear to be covered," he said. A committee report released this week has shown that there is a good chance of combating soil salinity. It identified the current extent of salinity and its likely development and recommended appropriate action. With the committee members are observers from Papua New Guinea and New Zealand. [Text] [Perth THE WEST AUSTRALIAN in English 14 Oct 82 p 36]

DROUGHT POLLUTION THREAT--The drought which has hit agricultural regions of NSW and Victoria is creating a serious and widespread water pollution threat. The Australian Standing Committee on Soil Conservation warned in Perth yesterday that the trouble will start as soon as the drought breaks. The committee expects eventual rainfall to seriously damage dried-up farms, sweeping thousands of hectares of fine topsoil into streams, rivers and catchment areas. Along with the topsoil will go accumulated chemical fertilisers and dung from stock. Country towns will be worst hit. Most rural reservoirs do not have the filtering equipment that will be needed to clean the water. The result will be cloudy and possibly poor-tasting drinking water. Sydney and Melbourne will largely escape the effects of water pollution because of covered catchment areas and filter systems in their water distribution networks. But they are unlikely to escape all the effects of the drought. Speaking yesterday after the committee meeting, the chairman of the Victorian Soil Conservation Authority, Mr Alex Mitchell, said there was the risk of dust storms and "red rain" in both cities. [Text] [Canberra THE WEEKEND AUSTRALIAN in English 16-17 Oct 82 p 3]

CSO: 5000/7511

EXPERTS APPOINTED TO REVIEW ENVIRONMENTAL LAWS

New Delhi PATRIOT in English 31 Oct 82 p 5

[Text]

The Government is appointing an experts cell to review the existing legislative measures for environmental protection and suggest effective measures for their enforcement reports UNI.

Speaking to newsmen on the eve of the completion of two years of the Department of Environment Deputy Minister Digivjay Sinh said all State Governments had been advised to set up separate departments for environment protection and development.

Madhya Pradesh Uttar Pradesh, Karnataka Tamilnadu and West Bengal had already set up such departments and other States were expected to follow suit, he added.

Mr Singh said it was proposed to set up an institute for Himalayan ecology soon to study in-depth the environmental problems of the Himalayan region. The institute would be located in one of the UP districts falling within the region.

He said various areas requiring fresh legislation have been identified. They are biosphere reserves, protection of grazing lands, protection of catchment areas, prevention of overfishing in coastal waters and toxic substances control.

The consultancy services of the International Union of Conservation of Nature (IUCN) will be utilised for those areas like biosphere reserves where adequate legal expertise is not available in the country.

Mr Digvijay Singh said a pilot project would be set up in Dehra dun tehsil covering an area of 1,812 sq kms to demonstrate the feasibility of integrated eco development concepts. It will be under the joint auspices of the Department of Environment and the Uttar Pradesh Government.

The project will cover all important aspects like industry mining operation, waste disposal settlements planning and extensive afforestation.

CSO: 5000/7010

GANDHI SPEAKS TO FORESTRY MINISTERS CONFERENCE

Madras THE HINDU in English 19 Oct 82 p 9

[Text] NEW DELHI, Oct. 18.

Forest Ministers from State Governments began their conference here today with a call by the Prime Minister, Mrs. Indira Gandhi, for a total change in the approach to forestry management to arrest the depletion of forest resources and to save the country's endangered flora and fauna.

Mrs. Gandhi said if there was no change in the way forest resources were managed, the present set-up would be reviewed. In this context, she referred to the demand for shifting forestry from the Agriculture Ministry to the newly created Department of Environment at the Centre. Though she did not say it in so many words, she implied that this would be done if there was no visible improvement in the forest cover under the present set-up.

The Prime Minister urged State Governments to ban the felling of trees, do away with the system of contractors for exploiting forest resources, concentrate more on regeneration and replantation and give greater attention to programmes of social and farm forestry.

Strong commitment: She regretted that though the importance of all these steps was realised there was wavering when it came to taking concrete decisions. She wanted a strong commitment on the part of all those involved in forest management to conserve resources.

Mrs. Gandhi agreed with the Agriculture Minister, Rao Birendra Singh, that the financial allocation for forestry was meagre. But she felt it could not be helped as the country's financial position was strained. She hoped however, that the situation would improve soon.

In his welcome address, Rao Birendra Singh said the financial provision for forestry was only 0.7 per cent of the total Plan outlay. This was not enough. For instance, 15 lakh hectares would have to be planted every year to meet fuel and other needs. This would require Rs. 800 crores a year.

Not enough money: Against this, the allocation in both Central and the State sectors totalled Rs. 90 crores. The inadequacy of finance was a constraint on bringing up the forest cover to the level desired by the Prime Minister, he added.

Rao Birendra Singh regretted that despite repeated letters from the Prime Minister to State Chief Ministers to increase forest cover, the desired results had not been achieved. The State Governments seemed to feel that the Centre was interfering with the authority exercised by them over their property. Forests were national wealth, though technically they might be the property of the State Governments.

The Union Government was just trying to prevent the State Governments from slaying the goose that laid the golden eggs, he said. The State Governments, he said, received an annual revenue of Rs. 100 to Rs. 150 crores from forests. But they spent only Rs. 5 crores to Rs. 6 crores on regeneration and new plantations.

CSO: 5000/7008

COOPERATION WITH NEPAL IN HIMALAYAS URGED

New Delhi PATRIOT in English 15 Oct 82 p 4

[Text] Chipko movement leader Sunderlal Bahuguna has suggested that a joint committee of members of the Planning Commissions of India and Nepal be set up to chalk out a 'Himalayan policy of development', reports UNI.

He said in a report that India is facing the same problems of forest conservation in its Himalayan region as Nepal. A joint committee could help launch a common programme.

Fiftysix-year old Bahuguna will being at Siliguri on 17 October the third and last phase of his 4,500 km foot march through the Himalayas from Kashmir to Kohima to create awareness among the masses about the need for forest protection.

The 3,000 kms he has walked so far included a 1280 stretchfrom Mahakai to Mechi in the Nepal Hamalayas.

Mr Bahuguna wanted both Nepal and India to chnge the land use pattern of the hills.

He said priority should be given to the plantation of trees for food, such as chestnut and seasonal furit trees, to meet people's basic necessity. Next in priority should be trees for production of fodder, fuel, fertiliser and fibre.

The Chipko movement leader said deforestation in the hills had impoverished the once prosperous highlander, and led to scarcity of fodder, fuel and drinking water.

He was demanded that all hill forests be declared as protection forests and that felling of green trees for commercial purposes be banned.

Mr Bahuguna held a film slides show for a group of members of Parliament in New Delhi on Wednesday to demonstrate how the Himalayas are being denuded of forests.

CSO: 5000/7007

BRIEFS

PORT POLLUTION OFFICERS--Bombay, October 14. An anti-pollution officer is to be appointed for each of the ten major ports in the country to ensure that the harbours are clean. To begin with, Bombay, Madras and Calcutta ports will have such an officer. The anti-pollution officer, of the rank of port pilot, will form part of the deputy conservator's department, Mr. K. K. Uppal, chairman of the Indian Port's Association, said today. Mr. Uppal is the chairman of the Bombay Port Trust. At present, there is no machinery for detection of pollution of the harbour waters and enforcement of anti-pollution measures. The penalty under the Merchant Shipping Act is also not deterrent, it being up to Rs. 2,000 fine on the master of the vessel flouting the rules. Many ships coming to Indian ports are known to let out the discharge into the sea after cleaning bilges. Foreign ports do not allow this. Meanwhile, the bill just passed by Parliament to amend the Merchant Shipping Act of 1958 provides for collection of a cess for creating oil reception facilities at the Indian ports and for obtaining equipment and materials for combating oil pollution at the ports. The cess will be at 50 paise per each ton of oil imported into or exported from India. The bill also raises the limitation of liability of the tanker-owner in our territorial waters. [Text] [Bombay THE TIMES OF INDIA in English 15 Oct 82 p 7]

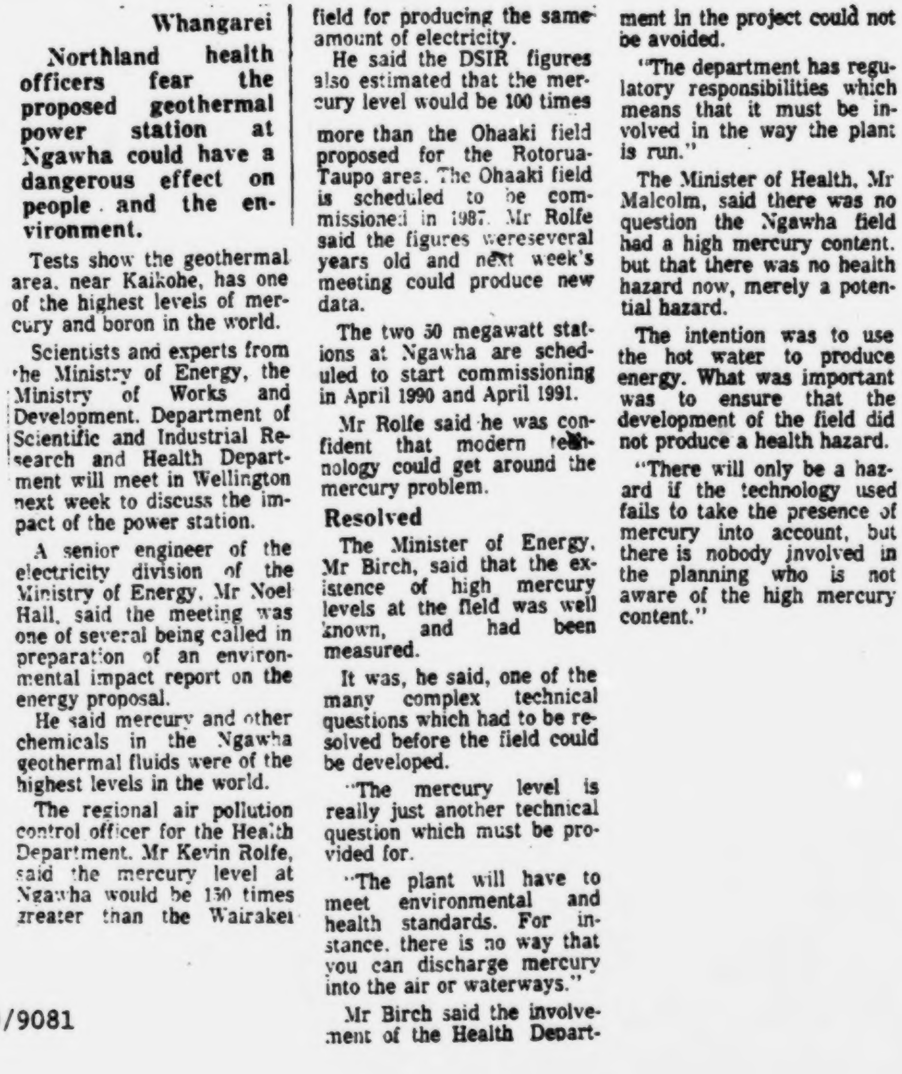
FOREST ACREAGE LOSS--In 19 years from 1951, over four million hectares of Government forest land was reported to have been diverted to non-forest purposes, Prime Minister Indira Gandhi said in the Lok Sabha on Wednesday, reports PTI. However, since 1980, when the Forest (Conservation) Act came into force only about 6,000 hectares had been diverted to non-forest purposes, she told Mr R.P.Gaekwad and Mr Jitendra Prasad. Loss of forest cover had also taken place due to encroachments, illicit fellings, grazing, fire and other biotic factor, Mrs Gandhi added. An exact estimate of the losses for the whole country had however, not been made, she said, adding that several steps had been taken to preserve ecological balance. [Text] [New Delhi PATRIOT in English 21 Oct 82 p 5]

CSO: 5000/7009

PROPOSED GEOTHERMAL POWER SITE HAS HIGH MERCURY LEVELS

Auckland THE NEW ZEALAND HERALD in English 16 Sep 82 p 1

[Excerpts]



Whangarei

Northland health officers fear the proposed geothermal power station at Ngawha could have a dangerous effect on people and the environment.

Tests show the geothermal area, near Kaikohe, has one of the highest levels of mercury and boron in the world.

Scientists and experts from the Ministry of Energy, the Ministry of Works and Development, Department of Scientific and Industrial Research and Health Department will meet in Wellington next week to discuss the impact of the power station.

A senior engineer of the electricity division of the Ministry of Energy, Mr Noel Hall, said the meeting was one of several being called in preparation of an environmental impact report on the energy proposal.

He said mercury and other chemicals in the Ngawha geothermal fluids were of the highest levels in the world.

The regional air pollution control officer for the Health Department, Mr Kevin Rolfe, said the mercury level at Ngawha would be 150 times greater than the Wairakei field for producing the same amount of electricity.

He said the DSIR figures also estimated that the mercury level would be 100 times more than the Ohaaki field proposed for the Rotorua-Taupo area. The Ohaaki field is scheduled to be commissioned in 1987. Mr Rolfe said the figures wereseveral years old and next week's meeting could produce new data.

The two 50 megawatt stations at Ngawha are scheduled to start commissioning in April 1990 and April 1991.

Mr Rolfe said he was confident that modern technology could get around the mercury problem.

Resolved

The Minister of Energy, Mr Birch, said that the existence of high mercury levels at the field was well known, and had been measured.

It was, he said, one of the many complex technical questions which had to be resolved before the field could be developed.

"The mercury level is really just another technical question which must be provided for.

"The plant will have to meet environmental and health standards. For instance, there is no way that you can discharge mercury into the air or waterways."

Mr Birch said the involvement of the Health Department in the project could not be avoided.

"The department has regulatory responsibilities which means that it must be involved in the way the plant is run."

The Minister of Health, Mr Malcolm, said there was no question the Ngawha field had a high mercury content, but that there was no health hazard now, merely a potential hazard.

The intention was to use the hot water to produce energy. What was important was to ensure that the development of the field did not produce a health hazard.

"There will only be a hazard if the technology used fails to take the presence of mercury into account, but there is nobody involved in the planning who is not aware of the high mercury content."

CSO: 5000/9081

POLLUTION CONTROLS BOOST STEEL MILL EXPANSION COSTS

Wellington THE EVENING POST in English 7 Oct 82 p 4

[Text] AUCKLAND, Today (PA). — New Zealand Steel says it will have to spend more than $100 million on environmental protection for stage one of its Glenbrook mill expansion.

This represents 17 percent of the $616 million cost of the new iron and steel-making facilities.

On today's prices, environmental protection would cost $97.5 million and the new plant and buildings $572 million.

By May 1984 when stage one is complete, escalating costs will increase the price tag to $105 million for environmental protection and $616 million for the new plant.

Equipment for air pollution control is expected to be the most expensive item. The Health Department has given the company until March to upgrade pollution control from its multihearth furnace, and the cost of this has been included in the environmental budget for stage one.

The senior development engineer for the New Zealand Development Co, Mr Steve Reindler, said environmental measures included a gas-cleaning system, water treatment and sewage disposal.

Noise and air pollution control equipment would be installed, and the water intake pipe on the Waikato River would be specially designed to protect fish life.

The cost also covered engineering designs and the compiling of the environmental impact report covering the mill expansion, he said.

The stage one expansion of the mill will boost production by about 600,000 tonnes of slab steel a year. Stage two will involve the building of hot and cold rolling mills to roll slab steel into coil products.

In March 1981 the total cost of the expansion was estimated at $830 million, but allowing for inflation this is equivalent to $1075 million at today's prices.

CSO: 5000/9081

BRIEFS

ECOLOGICAL MAPS--Wellington (Press Assn)--A Government mapping project has been completed and will help planners to avoid the "serious blunders of the past," the Minister of Science, Technology and the Environment, Dr Shearer, said yesterday. Maps have been prepared by the Department of Scientific and Industrial Research dividing the country into 82 natural ecological regions, identifying them according to their dominant features--forests, plant life, soil types, climate or geological structures. Dr Shearer said the maps would "help national and local planners to avoid the serious blunders of the past caused by attempts to apply the land use practices developed in one district to the different conditions of another." They are "designed to promote land and water uses that protect the natural diversity of our landscape, and its flora and fauna." "The subdivision of New Zealand into natural regions will make it easier for us to establish an inventory of the country's landscapes, plant and animal life, as a basis for a system of protected areas," Dr Shearer said. [Text] [Auckland THE NEW ZEALAND HERALD in English 17 Sep 82 p 9]

MARINE PARK--A marine park at Mimiwhangata, halfway between Whangarei Heads and the Bay of Islands, would offer the public "a unique recreational experience" while protecting the environment. This is one conclusion of an environmental impact report on the proposed marine park, prepared by the Department of Lands and Survey for the Hauraki Gulf Maritime Park Board. While Mimiwhangata's marine resources are not unique, it says, they are among the most valuable on the eastern Northland coast. "It is imperative that the environment remains without deterioration," says the report. "The proposed marine park is an attempt to provide balanced management (allowing for both recreation and conservation)." The park board's plan is to establish an area stretching 1000 metres out to sea as a park by phasing out commercial fishing and restricting recreational fishing and shellfish collecting. The Commission for the Environment will prepare an audit of the report. [Excerpts] [Auckland THE NEW ZEALAND HERALD in English 17 Sep 82 p 3]

CSO: 5000/9081

THREE TOP POLLUTERS OF RIVERS LISTED

Cebu City VISAYAN HERALD in English 7 Oct 82 p 5

[Text] Manila--(DEPTHnews)--The mining, chemical and paper industries are the three top polluters of rivers in the country.

The National Pollution Control Commission pinpointed the top sources of water pollution through the inspection of 4,059 industrial establishments nationwide.

In a briefing paper for the Safety Organization of the Philippines Inc., NPCC Commissioner Pechache pinpointed the top sources of water pollution through the inspection of 4,059 industrial establishments nationwide.

In a briefing paper for the Safety Organization of the Philippines, Inc., NPCC Commissioner Pechache reported that of the firms inspected, 1,672 were found air-pollutive; 1227 water pollutive; pollution control devices; and 505 without water treatment plants. [as published]

The NPCC inspection sought to determine how far industries have gone in installing pollution control facilities. An anti-pollution law gave these industries until 1987 to come up with such protective devices.

In the case of the mining industry, the Commission found that the 24 mines active as of the 1981 last quarter were disgorging from 100,000 to 144,000 metric tons of tailings daily. The tailings or refuse from the mines are usually dumped into rivers, creeks and coastal waters.

As a result of this dumping NPCC said nine rivers in Luzon have become polluted, three in the Visayas, and one each in Palawan and Marinduque.

The tailings also cause damage to agricultural fields. NPCC said owners of damaged farm lots have sued for damages with some of the mines made to pay. Other damage suits await court decision.

CSO: 5000/4302

INSTITUTE OF COUNTRY ECOLOGY DESCRIBED

Prague TVORBA in Czech No 37, 15 Sep 82 p 14

[Interview with Doctor of Natural Sciences Jaromir Pospisil, Candidate for Doctor of Sciences, Director of the CSAV [Czechoslav Academy of Sciences] Institute of Country Ecology in Pruhonicen near Prague, by Lubomir Sedlak; date and place not specified]

[Text] [Question] Comrade Director, why an Institute of Country Ecology? Are not cities also environments for people?

[Answer] Five years ago, when our institute was created, there actually were arguments concerning its name. Recently we had visitors from Algeria and they did not quite understand the term "paysage," which I used in translating the word "krajina" into French. The word "country," you see, connotes to most people, thanks to poets and other artists, nature. However, we as ecologists define the word much more broadly, dividing it, for instance, into natural regions and urban regions. Recently in Ostrava the CSAV also created an Institute of Industrial Regions. It is true that we are not as yet conducting much research in cities, but we spend a good deal of time on the relations between cities and open spaces, which is the name we give to nature (we include neither villages nor vacation-home settlements in our definition). This is because outdoor recreational activity has, in my opinion, the same influence on a region as industry and agriculture. One only has to look at the Lipen dam during the summer season.

[Question] How many people work at your institute?

[Answer] There are 42 candidates and doctors of science. When you add to this the other "primary" employees, the foreign students and graduate students and the administrative personnel, of which we have, by the way, very few, it amounts to a little over 130 people. In CSAV institutes as a rule one-third of the employees have advanced degrees, another third "only" a college education, and the remaining third high school.

[Question] Are your employees primarily biologists?

[Answer] Biologists and chemists. But we also have economists, geographers, graduates of agricultural and forestry colleges, two sociologists and even a philosopher; the basis of our work, however, is in the natural sciences.

[Question] Isn't two sociologists too few? I sometimes have the feeling that the environment in our country is understood as strictly a natural scientific and technical matter...

[Answer] Don't forget that the CSAV has environmental divisions in the Institute of Philosophy and Sociology, in the Economics Institute, and in the Institute of the State and Law.

[Question] What is the main difference between your institute and the CSAV Institute of Botany, which is also based in Pruhonice?

[Answer] The Institute of Botany studies the "green covering" of the Earth, including ecological relationships, but only those of this vegetation. We do not study flora and fauna as an "independent entity." This is the purpose of the Brno Institute for Vertebrate Research, the Prague Entomological Institute, and other scientific institutions. We are not interested in the rarity of the jason, a type of butterfly, but in whether it occurs in a particular ecosystem that we are studying. Should it disappear this means that something has changed in this ecosystem. For us, biological species are a type of indicator, litmus paper to aid us in determining the condition of the environment in a particular area. And we know that certain species are very sensitive to pollution. Lichens, for instance, grow basically at altitudes of over 500 meters, and no lower, because the air at lower elevations is of poor quality. We are interested, then, above all in how animals, plants, insects, mushrooms, etc. are organized in a specific ecological system and also in their relationship to man.

[Question] How do you cooperate with the CSAV Institute of Geography?

[Answer] It can be said that we begin where the geographers stop. They map the terrain for us, and we look for the causes of certain situations on this terrain and for ways to change them.

[Question] Do your employees use the Pruhonice park for scientific work?

[Answer] For certain experiments, but not very often. Don't forget that parks are only one, albeit very specific, regional feature.

[Question] Doesn't it appear a little ironic to you that it was right in Pruhonice, the home of the Institute of Regional Ecology, that there was an ecological accident not long ago (which was written up in RUDE PRAVO), specifically, a leak of crude oil?

[Answer] It will probably surprise you that ecological accidents are something quite natural in the life of our planet. An ecosystem left undisturbed by man can survive quite a lot, for instance a volcanic eruption, and renew itself over time. In Czechoslovakia, because we are an advanced industrial country, ecological relationships are pretty strained. Previously, when diesel fuel would leak into the Sazava, there was on the whole nothing to be concerned about. Today this would threaten one-quarter of the water supply for Prague.

[Question] What is the condition of the environment near where you live?

[Answer] I live in the Zahradni Mesto section of Prague. It sounds poetic, but today this is an area primarily of apartment buildings, and not far away the Mitas rubber mill poisons the air. I live, however, in a smaller house with a park nearby, so I have even been able to take home some shrubs and trees from the institute.

[Question] Do you get out of town a lot?

[Answer] Whenever I can. I do not, you see, own either a cottage or a hut, but am content with a house trailer for my car, and to travel with my wife, children and dog.

[Question] I saw you last year at a press conference on the long-distance study of the Earth with the aid of satellites. Was this an accident?

[Answer] This research is very important for ecologists because it is capable of covering huge areas; it makes possible a view of the crown of a tree from above and, as is well known, it is the tops of trees that suffer the most from industrial emissions--it is here that their impact is noticed first. Moreover, from long-distance research we obtain information on an entire territory in a few hours. The volume of data may only be processed by a computer, which we are to receive in 2 years. For the time being, we are taking advantage of cooperation with other institutes, for instance the Institute of Information and Automation Theory, which is directed by Academician Kozesnik, former CSAV president.

[Question] What are you doing to make the people of the CSSR aware of the importance of ecology?

[Answer] A while ago, for instance, I did a program for television which was titled "Environment for Life." I am also the chairman of the editorial council of the monthly magazine OUR NATURE. Not long ago I published an article there entitled "Does Nature Make Exceptions?," in which I concluded that exceptions, for instance, the release of waste water into a river, are condoned only between one person and another, and that "mother" nature asks no one. This article was the initial one of an entire series in the magazine on this subject. Subsequent articles will be contributed by an economists, a lawyer and other experts.

[Question] Nevertheless, doesn't it appear to you that man is somewhat in the background in this magazine (even in its title)?

[Answer] I guess you are right. You know, the relationship between man and nature is far more complex than nature itself.

[Question] Does an ecological map of Czechoslovakia exist?

[Answer] It is my view that such a map would be impossible to put together. The condition of the environment consists of immense amounts of data, all of which would not fit on a map. Certain specific maps, however, have been drawn, for instance of vegetation, bird nesting patterns, air pollution, etc. I think that it would also be possible to put together a map of the "ecological resistance" of regions.

[Question] Shouldn't a Ministry of the Environment be established in our country?

[Answer] It is possible that one should, though countries have solved this problem in various ways. In the Soviet Union, they have the State Committee for Environmental Protection, as well as the so-called Biosphere Council attached to the Academy of Sciences. When, for instance, this council met in the Moldavian capital of Kisinev, both the first secretary of the CPSU and the chairman of the council of ministers of this Soviet republic participated and signed the final document.

[Question] Do you think that environmental protection is taken more seriously in the Soviet Union than here?

[Answer] Certainly, even though this is conditioned by a few "objective" causes. The USSR and Mongolia are, for instance, the only socialist countries where all of the land, even the kholhoz land, is owned by the state. I would cite Lake Baikal as an example. No one from industry was even consulted there until scrubbers had been installed. There was no question of the attitude "Well then, choose, either the environment or production" such as occurs in Czechoslovakia, where certain "captains" of industry literally force the politicians to the wall. Recently one of our scientists returned from Baikal and told us how they had offered him a glass of waste water from one of the factories on the shore of the lake! It was completely transparent and tasted like mineral water, because there was a lot of salt in it.

[Question] Is the environment worsening in our country in the countryside as well?

[Answer] I would even say that currently the countryside is just as bad off as the city, and even worse off in some respects. In the villages, in contrast to Prague, there are not, for instance, water works with inspected water. Recently I was visiting a friend in Zelezne Hory, and not a single well there had been approved as 100 percent safe hygienically. On the other hand, in the cities there are more stresses of a psychic nature, for instance when mass transportation does not function...On the whole, however, the environment of the countryside will always be better for the simple reason that there is less of everything there.

[Question] Are you aware that certain of our agricultural products are having problems on foreign markets because they are "overchemicalized?"

[Answer] You have brought up a very complex problem. Chemicalization cannot be responsible for everything, however. I think that mainly we should implement the slogan here that "less is sometimes more." Man as a biological species is not dependent on how much, let us say, coal he produces, since this represents only one aspect of his standard of living, but on the kind of air, water, etc, that he has. The environment is an inseparable component of the standard of living, as we are fond of saying, but what position in this standard will it occupy? It is my opinion that it is the foundation on which the other components must develop. What good will cars be to us if we have nowhere to go? Today, every third family in the CSSR has a car, and this is, shall we say, a manifestation of a certain standard of living. But certainly everyone requires potable water; and we cannot say that "in our country every third family has access to potable water."

[Question] But, for instance, in India this is the case...

[Answer] However, one cannot speak about some kind of standard of living in relation to the starving people of the developing countries. Clean water and air are a manifestation of a necessity of life or, if you will, a minimum for life.

[Question] In what ways is your institute cooperating with the other socialist states, especially the neighboring ones. I have in mind, for instance, the influence of emissions from the GDR and the People's Republic of Poland on the Jizerske Hory and, gradually, on the Krkonose as well?

[Answer] This situation is being handled by state organs.

[Question] Which of the world's ecological problems seems to you to be the most serious--the cutting down of the tropical forests, the so-called greenhouse effect, the chemicalization of agriculture, the shortage of potable water, or increasing urbanization?

[Answer] None of these, even though all of them are of course pressing. The main obstacle to greater environmental quality is what can be called the "exploitative approach" of man. As early as the last century Engels wrote, I think in "The Dialectic of Nature," that "nature cannot be conquered as a conqueror subjugates a foreign people; we must realize that we are a part of it." Moreover, environmental problems must be solved systematically, they cannot be approached on a day by day basis. Isn't it better to put baskets on a street full of trash than to clean the street every day? Sometimes, however, I admit that not even these baskets help, but this is a problem for the psychologists, not the ecologists.

[Question] It is sometimes said that the national economy and the environment do not dovetail completely. Northern Bohemia is cited as a typical example. What do you think, are economics and ecology mutually exclusive?

[Answer] Don't forget that in many respects we were forced to start on the basis of what capitalism left us here. Moreover, socialism is only, as is well known, a transitory stage in the history of humanity, including the not completely ideal environment. For the time being we must mine brown coal in North Bohemia, and the worsening environmental effects can only be moderated, for instance with separators. For this reason, it made me even more angry when, for instance, these separators were turned off at night at the Komorany electric power plant, as I read not long ago in TVORBA. Such actions can be called nothing else than criminal and should be punished as such. Very positive results are being achieved in the northwestern areas of our republic in recultivation. If you could see how the areas around mine shafts look in Sweden or in Finland, countries which are often held up as examples of environmental protection--they are devastated areas with which nothing can be done. It is not surprising then that their experts take excursions to the Podkrusnohory area.

[Question] And what about the time when all the brown coal will be mined?

[Answer] At that point, hopefully, we will be getting most of our energy from nuclear power plants. These do not completely resolve the situation, to be sure, but they make possible an approach to another method for obtaining energy, for instance, from plasma. Nuclear power plants, moreover, represent an enormous investment, which small countries cannot afford. The solution to this problem is cooperation. I think that there will gradually cease to be borders between the economies of states (in the environment there are none even today--take a look at the air), and gradually there will disappear what could be called the individualism of nations. The victory of socialism throughout the world is an economic inevitability, just as feudalism became untenable once manufacturing began to develop.

9276
CSO: 5000/3002

POLAND

DEVELOPMENT OF ENVIRONMENTAL POLLUTION OUTLINED

Environmental Situation Report

Warsaw GAZ, WODA I TECHNIKA SANITARNA in Polish No 7, Jul 82 pp 99-100

[Text] In the first half of 1982, the National Council of Environmental Protection issued a report discussing the causes of environmental degradation in Poland. The water in Poland is especially badly polluted. During the harvest and processing of sugar beets, 33 percent of all of the rivers are polluted above the permitted standards. Taking into consideration other hydrological data (years prior were not taken into consideration), the percentage of polluted rivers is now 49.4. Theoretically, 50 percent of the country's rivers cannot be used for economic purposes. Relatively clean water in Classes I and II is only 41.4 percent. Surface water is becoming less and less safe to drink. At present, approximately 50 percent of the surface water used by municipal water supply systems does not meet standards or threatens emergency pollution. The greatest threat to water quality on the Baltic coast is untreated sewage that flows directly into the sea near beaches and resorts. Many resorts have been closed in Puck Bay, Gdansk Bay and Vistula Lagoon.

National air pollution emissions for individual pollutants are as follows: factories, 60-70 percent; residential-community boiler plants and individual home boilers, 15-20 percent and cars, 10-15 percent. In 1975, the amount of particulate pollution emitted into the atmosphere was 2.2 million tons, while in 1980 it increased by 500 tons or 0.5 percent. Emissions of gaseous pollutants in 1975 were 3.0 million tons (sulfur dioxide (SO_2) at 2.1 million tons) and in 1980, 5.1 million tons (SO_2 at 2.8 million tons), which means an increase of 69 percent (32 percent for SO_2).

In 1980, only 11 percent of the factories emitting harmful gaseous pollutants had installed air pollution control devices. As a result of considerable concentration of SO_2 in the atmosphere, an average of 8 tons of sulfur compounds falls on 1 km^2 of land, which means that in 10 percent of the country there are levels exceeding 50 tons/km^2 per year.

Other basic elements polluting the environment are noise and vibration--side effects of human activity--that are harmful to one's health and reduce one's productivity. In 1972, deafness moved into first place among occupational diseases and constituted 32 percent of all cases of declining work ability. Vibration disease constituted 18 percent and occupied third place.

The most common and at the same time harmful noises come from car/truck, train and plane routes, as well as from communications installations and a significant number of factories. The greatest harm (in the opinion of 80 percent of those living in the cities) comes from noises attributed to car and truck traffic, street cars and trains. During the rush hours, street noise exceeds the allowable level of 65 dBA. Small towns have 10-25 percent of their streets in this category, medium-sized cities 20-45 percent and large cities 40-80 percent.

The production area in Poland continues to become smaller and soil quality deteriorates. These tendencies are very threatening because they have repercussions on food production. Between 16-18,000 hectares of land are taken annually for new factories, highways, cities, apartment complexes etc. Soil degradation also occurs. Between 75-85,000 hectares are dried out mainly by mining. This is caused by exceptional water drainage in agriculture and forestry: over 1 million hectares (82 percent) of peatbog have gone into economic use. If we continue current land reclamation policies to 2000, natural peathog will disappear from the Polish landscape. Mineral mining, especially through use of strip-mining, threatens land and soil. The area of soil degration caused by prospecting, drilling, mining and other industrial activities stood at 108.8 thousand hectares. A plan in 1976-80 called for 2,575 hectares to be recultivated, although only 1,455 hectares (56.5 percent) were reclaimed.

As regards the threatened state of plant life, it should be noted that among 2,300 species of seed plants and polypody, 50-60 percent have significantly reduced their area of productivity, and approximately 400 types are seriously threatened in the entire country. During the postwar period, the country's woodlands increased from 22.2 percent in 1950 to 24.6 percent in 1960. During the last 10 years, however, there has been a declining tendency in woodlands growth--27.3 percent in 1975 and 27.6 percent in 1980 (Europe's woodlands stand at 31.8 percent).

Wild animal populations are under the considerable influence of anthropogenic factors, which cause a far-reaching threat to the species. It is estimated that we have at present 41 disappearing species (almost 10 percent of the country's fauna), and 66 percent are seriously threatened.

A serious problem is the threat of radiation to people and the environment. The largest radiation dosage to people in Poland comes from natural sources. This dosage comes to around 180 millirems annually and it is composed of cosmic radiation and radiation from natural radionuclides contained in rocks, soil, home walls, water, air, plants, animals and human tissue.

The threat to health and the contamination of food, feed and articles of consumption exists in surface water (detergents and laundry materials) and eatable plants (lead, zinc and cadmium). Particularly harmful to human health are nitrites and nitrates, nitrosoamines, lead, cadmium, mercury, arsenic, fluorine and pesticides and antibiotics.

The Katowice voivodship, where particulate emissions are 30 percent and gaseous emissions 40 percent of national emissions, is particularly threatening to the environment. In a small area is also 60 percent of all national waste. The amount of residential and industrial sewage is approximately 22 percent of the national amount (during a 24-hour period there are 2,544,133 m^3 of sewage produced). Recultivation activity in the voivodship should be critically evaluated, as there was 54 percent less in 1980 than in 1975. During the years 1976-80, 4,200 hectares were recultivated, but only 3,000 hectares were genuinely reclaimed.

The greatest threat to the environment in Krakow and the surrounding area is air pollution. There are high concentrations of SO_2 in the voivodship. During the years 1971-78, permanent violations of permissible standards were evident for fluorine gas, which ranged from 0.03 to 0.51 mg/m^3.

For the Gdansk Bay, the most threatening are residential, industrial and agricultural sewage; burning and its byproducts and biogenic products carried by rivers. The greatest oxygen shortage is in the Gdansk Basin. During the years 1900-75, the average annual decline of oxygen concentrations per 100 meters was 0.26 mg/l, and after 1975 it was 0.53 mg/l.

Air pollution emissions from industrial sources in Legnica voivodship are approximately 38,200 tons of particulates and 500,900 tons/year of gases (154,900 tons of SO_2). The degree of air pollution in Legnica voivodship is tied closely with the mining and smelting of copper there. Basic pollutants include sulfur dioxide, sulfuric acid, carbon bisulphate, hydrogen sulphide, copper compounds, lead and cadmium.

Air pollution measurements show the great harm to the environment from activities at the "Police" Chemical Works. As a result of current production there, concentrations of fluoride compounds, sulfuric acid and ammonia compounds exceed allowable limits by several times.

Particulate and gaseous emissions threaten Babiagora National Park, Ojcow National Park (from factories in the Krakow region and Silesia) and Kampinos National Park (from the Warsaw Works and the Chodakow Textile Works).

Also threatened are extremely valuable natural areas besides the national parks: the Biebrzak Marshes polluted by the introduction of untreated sewage to the environment, to which even treated sewage is unsafe; the Masurian Lakes polluted by industrial, residential and agricultural sewage; the Leczyca-Wlodawa Lake Area and the Western Polesie Forests polluted by the Lublin Coal Area; the Vigry Lake polluted by industrial and residential sewage; the Suwalki Scenic Park degraded by ore mining and the Gostyn-Wloclawek Scenic Park destroyed by industrial emissions in Plock and Wloclawek.

Resort areas, like national parks, are included among specially protected areas, although regulations are not respected. Every Polish resort area suffers from excessive air pollution concentrations, of which the worst situation is in the health resorts in the Sudeten Mountains (the average annual particulate fallout is 140 t/km^2—40 t/km^2 is allowed). Violations of allowable SO_2 concentrations are 30 percent more frequent there than in any other Polish resort area. Nitric oxide and carbon monoxide concentrations are also significantly higher. In Cieplice Zdroj, Duszniki, Polanica and Szczawno, fluoride concentrations are also in violation of standards. The Sudeten health resorts have inadequate sewage disposal and a high degree of water pollution. The wasteful management of underground waters had led to threats to mineral sources (e.g., Ladek Zdroj).

Besides the pollutant emissions eminating from neighboring industrial regions (Walbrzych, Jelenia Gora, Legnica-Glogow Copper Area), also degrading the health resort areas are industrial sites located in the area, the residential economy (coal-fired heating and the lack of sewage treatment plants) and adjacent farms. In addition to the Sudeten health resorts are Swinoujscie, Kolobrzeg, Inowroclaw, Ciechocinek, Wieniec, Naleczow, Konstancin, Wieliczka, Swoszowice (fluoride), Rabka and Ustron. Without improvement to air and water quality in the resort areas, it is difficult to speculate on their chances of use and survival.

Air Pollution Situation

Warsaw RZECZPOSPOLITA in Polish 13 Aug 82 p 4

/Text/ There are 1,066 factories in the country that are especially harmful to air quality. Among this group, there are 144 that do not have any dust extracting equipment, while only 10 percent have equipment to reduce gaseous emissions.

Only 352 have air pollution control devices, although only 73 are really well equipped. Among the factories not having any control equipment are the Mazowieckie Refinery and Petrochemical Works in Plock, the Chemical Works in Police and the Nitrogen Works in Wloclawek. The greatest amount of particulate and gaseous emissions occurs in Katowice Voivodship (32 percent of all emissions), Krakow (13 percent), Legnica (7 percent) and Jelenia Gora (5 percent).

From the perspective of air pollution, one can cite five areas in the country that are particularly threatened. These are the Upper Silesian Industrial Area, Krakow region, Legnica-Glogow Copper Area, Jelenia Gora Valley and areas near Walbrzych and Police. A characteristic common to these areas, besides the constant violations of allowable sulfur oxides concentrations, is the high level of toxic substances; e.g., fluoride (Katowice, Police and Legnica), carbon disulphide (Jelenia Gora) and heavy metals, especially lead (Katowice, Walbrzych, Legnica-Glogow).

Moreover, there are areas where harmful substances in the air do not violate standards, but because of certain atmospheric conditions, results characteristic of ecologically contaminated areas also can appear. Examples of these areas include Konin (Aluminum Smelter), Plock (Mazowieckie Refinery and Petrochemical Works), Oswiecim (Chemical Works), Tomaszow Mazowiecki (Chemitex Wistom) and Wloclawek (Cellulose Paper Works and Nitrogen Works).

9807
CSO: 5000/3001

BRIEFS

KRUGER ANIMALS DYING--Drought conditions are reaching dangerous proportions in the Kruger National Park and large numbers of animals are dying. A spokesman, Dr P. van der Walt, said that there was no drinking water shortage because a water programme was introduced when the drought began. But he added that there was a lack of irrigation water in the park. "When we had a drought in the 1960s we wanted to introduce water catchments, but this has not been done." Dr van der Walt said that most of the catchments in the area were outside the park and that the water was used for agricultural purposes. He added that it was expected that only 40 percent of the grass and foliage that was normally available could be used and that was why the animals were suffering. "There is a likelihood that there will be no rain until January." The area that has been worst hit is around the Shingwedzi River because there has been virtually no rain in the area this year. Dr van der Walt added that the Sabie River was the lowest it had been for the last 30 years. According to him the animals were dying so quickly that the scavengers were not eating the carcasses. He said that it was good in a way, because normally the scavengers preyed on the buck and now they only ate the dead carcasses. Dr van der Walt added that the drought was just another phase in the ecological cycle and that it was a natural way of culling the animals. "In the summer months there is a lot of breeding and this will prevent overpopulation." He added that conservationists did not like this particular phase, but they always tried to prepare for phenomena such as these. [Text] [Johannesburg THE CITIZEN in English 11 Nov 82 p 9]

BUSH ENCROACHMENT--Bush encroachment threatens some 37-million hectares of South Africa's Bushveld areas, according to the Department of Environmental Affairs and Fisheries. The Department viewed the matter in such a serious light that it had decided to regard bush encroachment control as a soil conservation measure, the Director of the Division of Soil Protection, Mr Pikkie Baard, said in a statement in Pretoria yesterday. "Bush encroachment has assumed such serious proportions in some Bushveld areas of South Africa that it not only seriously hampers production from one of our greatest natural assets--the veld--but it also thwarts traditional veld improvement methods." Mr Baard announced a subsidy scheme for the control of bush encroachment in the Northern Cape districts of Kuruman, Postmastburg and Vryburg. A similar scheme would come into effect in the other Bushveld areas of the Transvaal, Natal and the rest of the Cape Province later, Mr Baard added.--Sapa [Text] [Johannesburg THE CITIZEN in English 10 Nov 82 p 17]

PESTICIDES IN FOOD--The Minister of Agriculture, Mr Greyling Wentzel, has been muzzled by his own Department because bureaucrats believed he was damaging South African food exports. The officials ripped out a page from a departmental information sheet--Agricultural News--which reported the new Minister on the subject of pesticides. Mr Wentzel had said in Heilbron in the Free State last week that South Africa was one of the few countries in the world where the incidence of pesticide residues in food was a serious problem. Although the speech was widely reported in the Rand Daily Mail and other major newspapers, officials, it seems, took fright--the Minister had made "too strong a statement" on the issue because he had misinterpreted the information. So a page three report in the latest edition of Agricultural News was ripped out of every copy and an introductory sentence on page one referring to the censored report was deleted with felt-tipped pens by civil servants. A senior Agriculture official said yesterday, "I want to be honest with the Press." The official, who asked not to be named, said information officers tore out the page on orders "from up top" because senior civil servants believed that Minister Wentzel's statement was "a little too strong" and could be damaging to South Africa's food exports. He said the Minister's speech was intended to warn farmers to use insecticides with more care but senior officials felt the Minister misinterpreted the situation and made "too strong a statement" on the issue. Dr Dolf van Niekert, Director of Agricultural Information, denied the information presented to him by the Mail. He said the page had been removed because a mistake appeared on it, and officials were not prepared to hold back the publication. The fact that Mr Wentzel's speech appeared on the same page was purely coincidental. "There is nothing sinister about the whole thing," Dr Van Niekerk said. [Text] [Johannesburg RAND DAILY MAIL in English 26 Oct 82 p 1]

CSO: 5000/39

PROPOSED BAN ON ASBESTOS WOULD HARM ECONOMY

Harare THE HERALD in English 29 Oct 82 p 6

[Text]

SWEDEN has banned asbestos except under strictly controlled conditions, Denmark is quickly phasing it out and vociferous lobbies in Britain and the United States are pressing to have it banned.

One of America's biggest asbestos producers, Manville Corporation, recently filed for bankruptcy — not because of bad financial management but because of the thousands of law suits that had been filed against it by disabled workers who had been exposed to asbestos.

In Zimbabwe, asbestos continues to be a major export. Production and sales have dropped recently, largely because of the world recession, although concern about the health hazards attached to asbestos has also played a role. Asbestos earned Zimbabwe $76 million in foreign exchange last year, but production fell by 11 percent during the first six months of this year and African Associated Mines, the largest producer, believes that its production for the whole of 1982 will drop by about 12 percent.

While awareness of the dangers of exposure to asbestos dust and the debilitating diseases it can cause has grown in this country, miners and manufacturers do not believe the answer lies in banning asbestos.

The product is not only far too important to this country's economy, but no substitutes have yet been found that have the same all-round applicability without having their own hazardous drawbacks.

Instead, experts believe asbestos will continue to be widely used, but under stricter control to protect the health of workers and the public at large.

UNFORTUNATE

Cde Christopher Ushewokunze, Secretary for Mines, said any ban on asbestos would be "unfortunate" for Zimbabwe as a developing nation. The repercussions would be too great — "loss of employment, loss of foreign currency resulting in the general deterioration of the country's economy".

"However, we do not believe asbestos will be banned, but controls over its use, even over the methods of mining and processing, will be increased. This we welcome because we believe the proper use of chrysotile (white) asbestos does not constitute a health risk."

The properties that make asbestos almost irreplaceable include non-flammability, flexing and tensile strength, head and electrical insulating ability and resistance to acids and alkalis.

There are six basic types of asbestos, the most common being chrysotile (white asbestos) and crocidolite (blue asbestos). Of these, blue asbestos of the type mined in South Africa is regarded as the most hazardous. Zimbabwe only has deposits of white asbestos.

Asbestos is hazardous when its fibres are released into the air and breathed in by humans.

It has been accepted since the early 1920s that exposure to asbestos fibres causes asbestosis, a progressive, disabling and incurable lung disease. Since then, it has been established that asbestos is known to have caused mesothelioma, a malignant tumour with a latent period of between 20 and 40 years, and experts are studying the possibility that white asbestos may cause other types of cancer.

100 CASES

In Zimbabwe, the Workmen's Compensation Insurance Fund has about 100 cases of asbestosis on its books but no mesothelioma cases. This is not an accurate reflection of the incidence of asbestos related diseases in this country because the cases only come from the mining sector and there could be many more in the industrial sector.

Cde Ushewokunze admitted that research "in this country and indeed in any other developing country . . . into the diseases attributed to asbestos exposure has been very lifmited". But, he pointed out, he had not "come across conclusive evidence of asbestos' health hazards, especially as it relates to the chrysotile asbestos which we mine".

STUDIES

A British study published in 1979 found that exposure to chrysotile alone rarely caused mesothelioma, but failed to identify a safety threshold below which there is no evidence of adverse effects from asbestos exposure.

The 1969 study published in Zimbabwe (by Professor Michael Gelfand and Professor S. Archibald Morton) found that out of over 8 000 workers examined, 39 were found to have asbestosis. This represented about 0,5 percent of the total workforce.

The study also found that between 1955 and 1959, eight people had lung cancer in the Zvishavane and Mashava mining areas and between 1960 and 1965, five people had lung cancer. The team said it suspected that "exposure to chrystotile may have some causal relation to the development of lung malignancy".

In response to growing concern about the health hazards of asbestos, the British government in 1969 imposed tight controls on fibre levels in asbestos factories. Regulations about protective clothing were also introduced. The British Health and Safety Commission will introduce even tighter controls in January next year.

In Zimbabwe, although there is legislation limiting dust levels in all mines, there is no asbestos fibre count limit, but the major companies in the industry have, because of their British links and growing awareness of the dangers of asbestos, introduced health and safety standards modelled on those in force in Britain. — Ziana Features Service.

CSO: 5000/33

BRIEFS

MIDLANDS DROUGHT--Gweru. Many cattle are dying in the Midlands because of the drought and the recent cold spell, the Midlands Drought Relief Committee heard at one of its regular meetings in Gweru yesterday. A total of 445 cattle deaths were reported in the Mberengwa district last month, while in the Gweru district an average of four a day were dying, the meeting was told. In the Gokwe district there were 27 reported deaths, most of them attributed to the drought and cattle eating poisonous plants, while in the Mvuma district some were dying after being stuck in mud. It was agreed by the committee that the actual figures were probably higher because some deaths had not been reported. It was also reported at the meeting that throughout the province the condition of cattle was poor except in the Kwekwe district where it was described as being "generally good". In Gokwe the conditions were described as "variable". In spite of the recent rains, the meeting heard that grazing in the whole of the Midlands province was still very poor and cattle were reported to be eating tree leaves and hut thatch in the Mvuma district.--Ziana. [Text] [Harare THE HERALD in English 28 Oct 82 p 11]

CSO: 5000/33

DECREE ON PROTECTION OF ATMOSPHERE PROMULGATED

Moscow VEDOMOSTI VERKHOVNOGO SOVETA ROSSIYSKOY SOVETSKOY FEDERATIVNOY SOTSIALISTICHESKOY RESPUBLIKI in Russian No 29, 22 Jul 82 pp 629 - 645

[Law No 1027 of the RSFSR Supreme Soviet Presidium on Protecting the Atmosphere and Decree No 1028 on the Procedure for Implementing the RSFSR Law "On Protecting the Atmosphere"]

[Text] Law of the Russian Soviet Federated Socialist Republic on Protecting the Atmosphere.

The atmosphere is one of the primary vitally important elements of the environment.

The scientific technical revolution which is affecting all aspects of society's life, the high rates of industrial development, the growth of cities, the expanding use of the atmosphere, and the increased scales of man's effect on the environment require increased attention toward the protection of the atmosphere.

The soviet state attaches a great deal of importance to the maintenance of the atmosphere's favorable conditions, its renewal and improvement in order to secure the best living conditions for the Soviet people -- their work, life, rest,and health protection -- and the further development of material production and culture.

The Constitution of the USSR and the Constitution of the RSFSR provide for the necessary measures to be taken to preserve the atmosphere in a clean condition for the sake of the present and future generations of the USSR which the Russian Soviet Federated Socialist Republic has joined on the basis of voluntary union and equality with the other union republics. The Soviet state is carrying out a series of scientifically sound technical, economic, social, and other measures which are aimed at preventing and eliminating pollution of the atmosphere and other harmful effects on it. And it is also engaged in international cooperation in this area.

Soviet laws have been called upon to actively contribute to the protection of the atmosphere.

Section 1. General Provisions

Article 1. The tasks of RSFSR laws on protecting the atmosphere.

The tasks of the laws of the Russian Soviet Federated Socialist Republic on protecting the atmosphere are: regulating public attitudes in this area in order to preserve the cleanliness and improve the condition of the atmosphere, prevent and decrease the harmful chemical, physical, biological, and other effects on the atmosphere which cause unfavorable consequences for the population, the country's national economy, and the plant and animal world; and strengthening the laws in the area of protecting the atmosphere.

Article 2. The laws of the USSR and the RSFSR on protecting the atmosphere.

The laws of the USSR and the RSFSR on protecting the atmosphere consist of the USSR law "On Protecting the Atmosphere", other legislative acts of the USSR which have been issued in accordance with it, the present law, and other legislative acts of the RSFSR on protecting the atmosphere.

Article 3. The competency of the USSR in the area of regulating relations concerning the protection of the atmosphere.

In accordance with the USSR law "On Protecting the Atmosphere" the following are subject to the jurisdiction of the USSR in the area of regulating relations concerning the protection of the atmosphere:

1) Determining common measures and establishing the primary propositions in the area of protecting the atmosphere;

2) The development and approval of all-union plans concerning the protection of the atmosphere;

3) Establishing norms for the maximum permissible concentrations of pollution substances in the atmosphere and the levels of their harmful physical effects on it;

4) Establishing the procedure for developing and approving norms for the maximum permissible discharge of pollution substances into the atmosphere and norms for their maximum permissible harmful physical effects on it;

5) The establishment of a system of state stock-taking of harmful effects on the atmosphere, which is common for the USSR;

6) State control over the protection of the atmosphere and the establishment of a procedure for carrying it out;

7) Solving other questions of union-wide importance in the field of protecting the atmosphere in accordance with the Constitution of the USSR and the USSR law "On Protecting the Atmosphere".

Article 4. The competency of the RSFSR in the area of regulating relations regarding the protection of the atmosphere.

The following are within the jurisdiction of the Russian Soviet Federated Socialist Republic in the area of regulating relations regarding the protection of the atmosphere regardless of the limits of the competency of the USSR: establishing a procedure for protecting the atmosphere; developing and approving republic plans for protecting the atmosphere; exercising state control over the protection of the atmosphere; solving other questions in the area of protecting the atmosphere if they do not pertain to the competency of the USSR.

Article 5. The competency of the autonomous Soviet socialist republics in the area of regulating relations regarding the protection of the atmosphere.

The following are within the jurisdiction of the autonomous Soviet socialist republics in the area of regulating relations regarding the protection of the atmosphere regardless of the limits of the competency of the USSR and the RSFSR: developing and carrying out measures to prevent and eliminate the causes of pollution and other harmful effects on the atmosphere; participating in planning the protection of the atmosphere; exercising state control over its protection; and solving other questions in the field of protecting the atmosphere in accordance with the laws of the USSR, the RSFSR and the autonomous republics.

Article 6. State control in the area of protecting the atmosphere.

In accordance with the USSR law "On Protecting the Atmosphere", state control in the area of protecting the atmosphere is carried out by the USSR Council of Ministers, the RSFSR Council of Ministers, the councils of ministers of the autonomous republics, the executive committees of local councils of peoples deputies, and by specially empowered state bodies in accordance with the laws of the USSR and the RSFSR.

Article 7. The competency of the executive committees of local councils of peoples deputies regarding state control in the area of protecting the atmosphere.

The executive committees of local councils of peoples deputies within the limits and in the manner, which have been established by the laws of the USSR, the present law and other legislative acts of the RSFSR, on their territory: insure the development and carrying out of measures to protect the atmosphere; participate in planning the protection of the atmosphere; exercise state control over its protection; take steps to improve the organization of public services and amenities and the planting of trees and shrubs on the territory of population centers; and solve other questions concerning state control in the area of protecting the atmosphere.

Article 8. Planning measures to protect the atmosphere.

The tasks to protect the atmosphere and the measures to prevent and eliminate the causes of pollution and other harmful effects on it and to improve the condition of the atmosphere are provided for in the state plans for economic and social development.

The draft plans for protecting the atmosphere, which have been developed by the ministries, state committees and departments, enterprises, establishments, and organizations, are coordinated with the bodies, which are exercising state control over the protection of the atmosphere, in the manner prescribed by the laws of the USSR and the RSFSR.

Article 9. The obligation to carry out measures on protecting the atmosphere.

In accordance with the laws of the USSR, the measures, which have been provided for by the plans to protect the atmosphere on the territory of the autonomous republics, krays, oblasts, large industrial centers, and on the territory of the RSFSR as a whole, are subject to being carried out by the enterprises,establishments and organizations which are subordinate to the ministries and state committees and departments of the RSFSR; and by the enterprises, establishments and organizations of the all-union and union republic ministries and USSR state committees and departments.

Article 10. The participation of public organizations and citizens in the carrying out of the measures to protect the atmosphere.

The trade unions, youth organizations, environmental protection society, scientific societies, other public organizations, and citizens assist state bodies in carrying out the measures to protect the atmosphere.

Public organizations participate in the work, which is aimed at insuring the protection of the atmosphere, in accordance with their regulations (statutes) and the laws of the USSR and the RSFSR.

In assisting state bodies in the carrying out of the measures to protect the atmosphere, citizens participate in performing the necessary work, make proposals about improving the protection of the atmosphere, and report violations of the requirements of the laws concerning the protection of the atmosphere, which are known to them.

Article 11. The obligation of state bodies to consider the proposals of public organizations and citizens concerning the protection of the atmosphere.

State bodies are required to give every possible consideration to the proposals of public organizations and citizens when carrying out the measures to protect the atmosphere.

Section 2. Measures To Protect the Atmosphere.

Article 12. The norms for the maximum permissible concentration of pollution substances in the atmosphere and for the level of their harmful physical effects on it.

Norms for the maximum permissible concentration of pollution substances and for the levels of their harmful physical effects on the atmosphere are established in order to evaluate the condition of the atmosphere. These norms must be responsive to the interests of protecting the people's health and protecting the environment.

In accordance with the USSR law "On Protecting the Atmosphere", the norms for the maximum permissible concentrations of pollution substances in the atmosphere and for the levels of their harmful physical effects on it are common for the entire territory of the USSR. In the necessary cases, stricter norms for the maximum permissible concentrations of pollution substances in the atmosphere are established for individual rayons.

These norms and the methods for defining them are approved and implemented in the manner prescribed by the USSR Council of Ministers.

Article 13. The norms for the maximum permissible discharge of pollution substances into the atmosphere and for their harmful physical effect on it.

In order to protect the atmosphere, norms for the maximum permissible discharge of pollution substances by stationary and mobile sources of pollution and norms for their maximum permissible harmful physical effect are established. These norms are established for each stationery source of discharge or other harmful effect on the atmosphere and for each model of transport and other mobile system and installation.

The norms for the maximum permissible discharge of pollution substances into the atmosphere and for their maximum permissible harmful physical effects on it are established at a level, at which the discharge of pollution substances and the harmful physical effects from a specific and all other sources in that rayon will not lead to an exceeding of the norms for the maximum permissible concentrations of pollution substances in the atmosphere and for the maximum permissible levels of their harmful physical effects, considering the prospects for the source's future development.

In accordance with the USSR law "On Protecting the Atmosphere", the mentioned norms, methods of determining them and the types of sources, for which they are being developed, are approved and implemented in a manner prescribed by the USSR Council of Ministers.

Article 14. Regulating harmful effects on the atmosphere when there are no norms.

Harmful effects on the atmosphere, for which the appropriate norms have not been established, may be permitted in exceptional cases in accordance with permits which are issued for a certain period by specially empowered state bodies. The appropriate norm for the maximum permissible harmful effect must be established and the necessary steps to protect the atmosphere must be carried out during this period.

Article 15. Regulating the discharge of pollution substances into the atmosphere by stationary sources of pollution.

The discharge of pollution substances into the atmosphere by stationary sources of pollution is permitted in each case based on a permit issued by specially empowered state bodies. The norms for the maximum permissible discharge of pollution substances and other conditions and requirements, which insure the protection of the atmosphere, are stipulated in the permit.

In accordance with the USSR law "On Protecting the Atmosphere", the procedure for issuing permits for the discharge of pollution substances into the atmosphere by stationary sources of contamination is established by the USSR Council of Ministers.

Article 16. Measures to regulate the discharge of pollution substances into the atmosphere by stationary sources of pollution.

Enterprises, establishments and organizations, whose activity is connected with the discharge of pollution substances into the atmosphere, are required to carry out organizational, economic, technical, and other measures to insure the fulfillment of the conditions and requirements which are stipulated in the permit for the discharge; to take steps to decrease the discharge of pollution substances; to insure the uninterrupted efficient operation of the structures, equipment and gear for cleaning the discharges and checking on them, and their maintenance in working condition; and to continuously meter the amount and composition of the pollution substances which are being discharged into the atmosphere.

The carrying out of the measures to protect the atmosphere must not lead to the contamination of the soil, water and other natural entities.

Article 17. Carrying out measures to protect the atmosphere during emergency situations.

When the norms for the maximum permissible discharge of pollution substances into the atmosphere are exceeded as a result of an emergency situation, the directors of enterprises, establishments and organizations are required to report this immediately to the organs which are exercising state control over the protection of the atmosphere and to take steps to protect the atmosphere and to eliminate the causes and consequences of its pollution in the prescribed manner.

Article 18. Measures to decrease the discharge of pollution substances into the atmosphere by stationary sources of pollution in connection with anticipated unfavorable meteorological conditions.

Upon receiving a warning about a possible increase in the concentration of pollution substances in the atmosphere in connection with anticipated unfavorable meteorological conditions, enterprises, establishments and organizations are required to take measures to decrease the discharge of these substances into the atmosphere -- measures which have been specially developed in accordance with the bodies which are exercising state control over the protection of the atmosphere.

Article 19. Limiting, halting, and banning the discharge of pollution substances into the atmosphere.

When there is a violation of the conditions and requirements stipulated by the permits and when a threat to the health of the population arises, the discharge of pollution substances into the atmosphere must be limited, halted or forbidden in accordance with a decision of the body which is exercising state control over the protection of the atmosphere, up to halting the activity of individual industrial assemblies, shops, enterprises, establishments, and organizations.

Article 20. Regulating the discharge of pollution substances into the atmosphere by motor vehicles, airplanes and other mobile systems and assemblies.

Ministries, state committees and departments, enterprises, establishments and organizations, which design, produce and operate motor vehicles, airplanes, ships and other mobile systems and assemblies, are required to develop and carry out a series of measures to prevent and decrease the discharge of pollution substances into the atmosphere by these systems and assemblies.

The amount of pollution substances, which is discharged by transport and other mobile systems and assemblies, must not exceed the norms for the maximum permissible discharge.

Article 21. Checking on the observance of the norms for the maximum permissible discharge of pollution substances by transport and other mobile systems and assemblies which are in use.

All transport and other mobile systems and assemblies, which are in operation, must be subjected to a check for the observance of the norms for the maximum permissible discharge of pollution substances. In accordance with the USSR law "On Protecting the Atmosphere", the regulations for checking on the observance of these norms are established in a manner determined by the USSR Council of Ministers.

Article 22. Banning the production and operation of transport and other mobile systems and assemblies whose discharges of pollution substances exceed the established norms.

The production and operation of transport and other mobile systems and assemblies, whose discharge of pollution substances exceeds established norms, are not permitted.

Article 23. Regulating harmful physical effects on the atmosphere.

Local councils of peoples deputies, ministries, state committees, departments, enterprises, establishments, and organizations are required to develop and carry out measures to prevent,decrease and eliminate the harmful effects of sound vibrations, including noise, radiation, etc. on the atmosphere.

In order to combat production and other noises, the following must be specifically carried out: introducing low noise level technological processes; improving the construction of transport systems and their operation and the maintenance of railroad and streetcar lines, motor vehicle roads and street pavements; locating air fields, airports and industrial and other structures and equipment, which are sources of noise, at the required distance from population centers and housing areas; improving the planning and construction of cities and other population centers; and carrying out organizational measures to prevent and decrease every-day noise.

The locating of factories, which are of an industrial nature, and also of equipment, which is a source of increased noise and vibration, in living quarters is not permitted.

Article 24. The conditions under which certain types of harmful physical effects on the atmosphere can be permitted.

In cases which have been defined by the laws of the USSR, certain types of harmful and physical effects on the atmosphere can be permitted but only based on permits which are issued by specially empowered state bodies.

Article 25. The halting, limiting or banning of activity by certain industrial and other assemblies, shops, enterprises, establishments, and organizations, which are violating the maximum norms for harmful physical effects on the atmosphere.

Any harmful physical effect on the atmosphere is permitted on condition that the established maximum permissible norms are observed and in cases where a permit has been issued for it-- where the other requirements, stipulated by this permit, are observed. When there is a violation of these requirements, the appropriate activity of the individual industrial and other assemblies, shops, enterprises, establishments, and organizations can be halted, limited or banned based on a decision of the body which is exercising state control over the protection of the atmosphere until the reasons, which have caused the exceeding of the maximum permissible norms or the violation of the requirements, which have been stipulated in the permit, have been eliminated.

Article 26. Protecting the atmosphere by limiting the movement of motor vehicles and other mobile systems.

In order to protect the atmosphere, local councils of peoples deputies can in accordance with the laws of the USSR and the RSFSR limit the entry of transport and other mobile systems and assemblies into population centers, certain areas, and rest and tourist areas.

Article 27. The citizen's observance of the established requirements to combat every-day noise.

Citizens are required to observe the requirements which have been established to combat every-day noise in apartments, the yards of living quarters, on the streets, in rest areas, and other public places.

Article 28. The siting, designing, construction and commissioning of enterprises, structures and other installations which affect the condition of the atmosphere.

When siting, designing, constructing, and commissioning new and reconstructed enterprises, structures, and other installations; and when improving existing and incorporating new technological processes and equipment, it is necessary to insure the observance of the norms for harmful effects on the atmosphere. In doing this, the trapping, recovery and rendering harmless of harmful substances and wastes or the complete elimination of pollution substances, and the carrying out of other requirements to protect the atmosphere must be stipulated based on the fact that the aggregate of the discharges and of the harmful effects from enterprises, structures and other installations, which are being designed, in operation, and being planned for future construction, doesnot lead to an exceeding of the norms for the maximum permissible concentrations of pollution substances in the atmosphere and of the norms for the maximum permissible levels of harmful physical effects on it.

In addition, the necessity for organizing sanitary protective zones around them must be considered when siting, designing, constructing, and commissioning new and reconstructed enterprises, structure and other installations.

Article 29. Examining proposals for siting new and reconstructed enterprises, structures and other installations which have an effect on the condition of the atmosphere.

Regardless of their departmental subordination, the review of proposals to locate on the territory of the RSFSR new and reconstructed enterprises, structures and other installations, which affect the condition of the atmosphere, is carried out in the manner established by the RSFSR Council of Ministers.

Article 30. Coordinating the construction sites and plans for the construction and reconstruction of enterprises, structures and other installations which affect the condition of the atmosphere.

The determination of construction sites and the plans for the construction and reconstruction of enterprises, structures and other installations, which affect the condition of the atmosphere, are coordinated with the bodies, which exercise state control over the protection of the atmosphere, and with other bodies in accordance with the laws of the USSR and the RSFSR.

Article 31. Conditions for banning the commissioning of installations which affect the condition of the atmosphere.

The commissioning of new and reconstructed enterprises, structures and other installations, which do not satisfy the requirements for protecting the atmosphere, is forbidden.

Article 32. Equipping sources of atmospheric pollution with cleansing systems.

Regardless of the time that they were commissioned, enterprises, establishments and organizations, whose activity is linked with the discharge of pollution substances into the atmosphere, must be equipped with structures, equipment and gear to cleanse discharges into the atmosphere and with systems for checking on the amount and composition of the discharged pollution substances.

Article 33. Exercising control over the designing, construction and operation of structures, equipment and gear for cleansing the discharges, which are contaminating the atmosphere, and for decreasing the harmful physical effect on it.

Ministries, state committees and departments are required to exercise control over the designing, construction and operation of structures, equipment and gear for cleaning pollution substances from the discharges into the atmosphere and for lowering the harmful physical effect on it and over the equipping of them with the instruments which are required for continuous observation of the effectiveness of the cleaning, the magnitude of the discharges and the harmful physical effects on the atmosphere.

Article 34. Fulfilling the requirements for protecting the atmosphere when siting and developing cities and other population centers.

The condition of the atmosphere, a forecast of its change and the task of protecting the atmosphere from harmful effects must be considered when planning the siting and development of cities and other population centers.

The designing, construction and reconstruction of cities and other population centers are conducted in accordance with the sanitary, hygienic and other norms and rules for protecting the atmosphere.

The councils of peoples deputies must take steps to improve the organization of public services and amenities and the planting of trees and shrubs on the territory of population centers; and enterprises, establishments and organizations on the production and other areas, which are occupied by them, in order to prevent or decrease pollution of the atmosphere.

Composite measures to normalize the atmosphere are developed and carried out in the prescribed manner in areas whose atmosphere is affected by the activity of a group of enterprises, establishments and organizations.

When it is impossible to decrease the discharge of pollution substances and the harmful physical effects on the atmosphere to the established norms, the appropriate enterprises, structures and other installations are closed or their production profile is subjected to a change.

Article 35. Observing the requirements for protecting the atmosphere when introducing discoveries, inventions, and new technical systems and also when purchasing imported equipment.

In accordance with the USSR law "On Protecting the Atmosphere", the introduction of discoveries, inventions, rationalizer proposals, new technical systems, substances and materials; and also the acquiring of technical equipment and other items in foreign countries are forbidden if they do not satisfy the requirements established in the USSR for protecting the atmosphere and are not equipped with technical systems for checking on discharges into the atmosphere.

Article 36. Fulfilling the requirements for protecting the atmosphere when using plant protection systems, mineral fertilizers and other preparations.

The list of plant protection systems, growth stimulators, mineral fertilizers, and other preparations whose use is permitted in the national economy and also the ways for using them are subject to coordination with the specially empowered organs of state control over the protection of the atmosphere in the manner prescribed by the laws of the USSR.

When creating new preparations which are to be employed for these purposes, norms for maximum permissible concentrations and methods for determining the residual amounts of these preparations in the atmosphere must be developed.

Kolkhozes, sovkhozes, other enterprises, establishments, organizations, and citizens must observe the regulations for transporting, storing and using plant protection systems, growth stimulators, mineral fertilizers, and other preparations so as not to allow their pollution of the atmosphere.

Article 37. Fulfilling the requirements for protecting the atmosphere when mining minerals and siting and operating waste heaps and dumps.

The mining of minerals, blasting operations, and the siting and operation of waste heaps and dumps must be performed by observing the rules for preventing or decreasing pollution of the atmosphere using methods which have been coordinated with the bodies which exercise state control over the protection of the atmosphere and with other bodies in accordance with the laws of the USSR and the RSFSR.

Article 38. Banning the siting of waste heaps and dumps and the storage of industrial and other wastes, which are a source of atmospheric pollution, in population centers; and banning the burning of these wastes.

The siting of waste heaps and dumps and the storage of industrial wastes, production and every day rubbish and other refuse, which are sources of atmospheric pollution because of their dust and harmful gas generation and foul smelling substances, and the burning of these wastes on the territories of enterprises, establishments, organizations, and population centers are forbidden except for cases where the burning is performed with the use of special equipment and where the requirements for protecting the atmosphere are observed.

Article 39. The obligations for removing wastes which pollute the atmosphere.

Enterprises, establishments and organizations are required to insure the timely removal of wastes, which could pollute the atmosphere, to enterprises using them as raw material or to special dumps.

Article 40. Requirements when designing installations and creating and improving technological processes and equipment which require air for production needs.

When designing enterprises, structures and other installations and when creating and improving technological processes and equipment, measures, which insure the minimum required use of air for production needs, must be stipulated.

Article 41. Regulating the requirement for air for production needs.

The requirement for air for production needs can be limited, halted or banned by the bodies, which are exercising state control over the protection of the atmosphere, in a case where this will lead to changes in the condition of the atmosphere which would have a harmful effect on the health of people and the animal and plant world.

Article 42. Regulating the effect on weather and climate.

Actions, which are aimed at an artificial change in the condition of the atmosphere and of atmospheric phenomena for national economic purposes, can be performed by ministries, state committees and departments, enterprises, establishments, and organizations only with the permission of specially empowered state bodies and only on condition that this will not lead to an unfavorable effect on the weather and climate.

Article 43. Material and moral incentives for carrying out measures to protect the atmosphere.

Material and moral incentive measures for enterprises, establishments organizations and citizens, which stimulate the performance of measures to protect the atmosphere, can be established by laws of the USSR and the RSFSR.

When summing up the results of socialist competition among enterprises, establishments and organizations, their performance of plans and measures to protect the atmosphere must be considered.

Section 3. State Stock-taking of Harmful Effects on the Atmosphere.

Article 44. State stock-taking of harmful effects on the atmosphere.

Objects which exert a harmful effect on the atmosphere, the types and amount of harmful substances emitted into the atmosphere, and the types and dimensions of harmful physical effects on it are subject to state stock-taking.

In accordance with the USSR law "On Protecting the Atmosphere", state stock-taking of objects and their harmful effect on the atmosphere is carried out at state expense using a system which is common for the USSR and in the manner determined by the USSR Council of Ministers.

Section 4. Observation and Control in the Area of Protecting the Atmosphere

Article 45. Observing the condition of the atmosphere.

In accordance with the USSR law "On Protecting the Atmosphere", the observation of the condition of the atmosphere using chemical, physical, and biological indicators is done by the state-wide service for observing and checking on the level of environmental pollution and is carried out in the manner determined by the laws of the USSR.

The collection, storage, search, and processing of information on the atmosphere's condition is carried out using a common system.

The support of interested state and public bodies, enterprises, establishments and organizations with regular information and forecasts about the pollution levels of the atmosphere influenced by economic activity and meteorological conditions, has been placed upon the state-wide service for observing and checking on the level of environmental pollution.

Article 46. Carrying out measures when the condition of the atmosphere threatens the people's health.

If a threat arises to the health of the people because of an unfavorable combination of meteorological factors, the discharge of pollution substances into the atmosphere and other harmful effects on the atmosphere, the bodies of the state-wide service for observing and checking on the level of environmental pollution must immediately report this to the RSFSR Council of Ministers, the appropriate councils of ministers of the autonomous republics, the executive committees of local councils of peoples deputies, and interested enterprises, establishments and organizations.

Upon receipt of such reports, the RSFSR Council of Ministers, the councils of ministers of the autonomous republics and the executive committees of local councils of peoples deputies shift the work of enterprises, establishments, organizations, and transport systems to a special operating mode or temporarily halt it in the prescribed manner so as to decrease the intensity of the discharges and eliminate the other harmful effects on the atmosphere. When necessary, they carry out a temporary evacuation of the population and take other urgent measures.

Article 47. State control over the protection of the atmosphere.

State control over the protection of the atmosphere has as its task the insuring of the fulfillment of atmospheric protection measures by all ministries, state committees and departments, state, cooperative and other public enterprises, establishments and organizations, and citizens; and the observance of the conditions for discharging pollution substances and other harmful effects on the atmosphere and also of the other rules which have been established by laws on protecting the atmosphere.

Article 48. The bodies which exercise state control over the protection of the atmosphere.

In accordance with the USSR law "On Protecting the Atmosphere", state control over the protection of the atmosphere is exercised by the councils of peoples deputies, their executive and administrative bodies and by specially empowered state bodies in a manner prescribed by the laws of the USSR.

Article 49. Departmental control over the protection of the atmosphere.

Departmental control over the protection of the atmosphere, including that over the observance of the norms for the maximum permissible discharge of pollution substances into the atmosphere and those for the harmful physical effects on it, is exercised by the bodies under whose jurisdiction the enterprises, establishments and organizations, which are exerting a harmful effect on the atmosphere, are located.

When exercising departmental control, ministries, state committees and departments are required to be guided by the laws of the USSR and the RSFSR and the regulations and instructions which have been approved by the specially empowered bodies for state control over the protection of the atmosphere.

Section 51. Resolving Disputes on Questions Concerning the Protection of the Atmosphere.

Article 50. Bodies which resolve disputes on matters pertaining to the protection of the atmosphere.

Disputes concerning matters related to the protection of the atmosphere are resolved by the RSFSR Council of Ministers, the council of ministers of the autonomous republics, the executive committees of local councils of peoples deputies, and specially empowered state bodies in the manner prescribed by the laws of the USSR, the present law and other laws of the RSFSR.

Article 51. The procedure for resolving disputes concerning matters on protecting the atmosphere which arise between the state and public organizations of the RSFSR and the state and public organizations of another union republic.

In accordance with the USSR law "On Protecting the Atmosphere", disputes between the state and public organizations of the RSFSR and the state and public organizations of another union republic on matters pertaining to the protection of the atmosphere are examined by a commission which is formed from representatives of the RSFSR and other interested union republics on an equal footing. In the event that the commission does not come to an agreed solution, the disputes on these matters are subject to a review in the manner determined by the USSR Council of Ministers.

Article 52. The procedure for solving disputes between the state and public organizations of autonomous republics on matters concerning the protection of the atmosphere.

Disputes between the state and public organizations of one autonomous republic and the state and public organizations of another autonomous republic on matters concerning the protection of the atmosphere are examined by a commission which is formed from representatives of the interested autnomous republics who are on an equal footing.

In the event that the commission does not come to an agreed solution, disputes on these matters are subject to review in a manner which is defined by the RSFSR Council of Ministers.

Disputes between the state and public organizations of an autonomous republic and the state and republic organizations of a kray or oblast on matters concerning the protection of the atmosphere are examined in the same manner.

Article 53. The procedure for resolving disputes between the state and public organizations of krays and oblasts on matters concerning the protection of the atmosphere.

Disputes between the state and public organizations of one kray or oblast and the state and public organizations of another kray or oblast on matters concerning the protection of the atmosphere are examined by a commission which is formed from representatives of the interested krays and oblasts who are on an equal footing.

In the event that the commission does not come to an agreed solution, disputes on these matters are subject to review in a manner which is determined by the RSFSR Council of Ministers.

Article 54. The procedure for reviewing disputes on matters concerning the protection of the atmosphere by the executive committees of local councils of peoples deputies.

Disputes between state and public organizations on matters pertaining to the protection of the atmosphere are examined by the executive committees of local councils of peoples deputies upon the application of one of the parties.

In order to prepare the material for solving these disputes, the executive committees of the local councils of peoples deputies can, when necessary, form commissions composed of deputies from the local councils of peoples deputies, representatives of the bodies which exercise control over the protection of the atmosphere and of other interested bodies, and the appropriate specialists.

The executive committee of the local council of peoples deputies which is examining the dispute on questions concerning the protection of the atmosphere, makes a decision in which the procedure for carrying out the decision and the measures for restoring the violated right of the state or public organization can be stipulated.

Section 6. Responsibility for a Violation of the Laws On Protecting the Atmosphere.

Article 55. Responsibility for a violation of the laws on protecting the atmosphere.

Persons, who are guilty of committing the following violations of the laws concerning the protection of the atmosphere:

exceeding the norms for the maximum permissible discharge of pollution substances into the atmosphere;

exceeding the norms for the maximum permissible harmful physical effects on the atmosphere;

discharging pollution substances into the atmosphere without the permission of the specially empowered state bodies;

violating the operating rules and also failing to use the prescribed structures, equipment and gear for cleaning and checking on discharges into the atmosphere;

commissioning new and reconstructed enterprises, structures and other installations which do not satisfy the requirements for protecting the atmosphere;

the production and operation of motor vehicles, airplanes, ships, and other mobile systems and assemblies whose discharge of pollution substances exceeds the established norms;

incorporating discoveries, inventions, rationalizer proposals, new technical systems, substances and materials and also buying technological equipment and other items in foreign countries which do not satisfy the requirements for protecting the atmosphere which have been established in the USSR, and which are not equipped with technical systems for checking on discharges into the atmosphere;

violating the rules for storing industrial and every-day wastes;

transporting, storing and using plant protection systems, growth stimulators, mineral fertilizers, and other preparations which involve or may involve pollution of the atmosphere;

failing to carry out the directions of the bodies which exercise state control over the protection of the atmosphere,

are criminally, administratively or otherwise liable in accordance with the laws of the USSR and the RSFSR.

Liability for other violations of the laws on protecting the atmosphere can be established by laws of the USSR and the RSFSR.

Article 56. Compensation for the damage which has been caused as a result of a violation of the laws on protecting the atmosphere.

Enterprises, establishments, organizations and citizens are required to compensate for the harm which has been caused by a violation of the laws on protecting the atmosphere in the amounts and procedure which have been established by the laws of the USSR and the RSFSR. Officials and other workers, due to whose fault the enterprises, establishments and organizations incurred the expenses connected with compensating for the loss, are materially liable in the prescribed manner.

Section 7. International Treaties.

Article 57. International treaties.

If other regulations than those, which are contained in Soviet laws on protecting the atmosphere, are established by an international treaty of the USSR, then the regulations of the international treaty are applicable.

The same procedure is applicable with regard to RSFSR laws on protecting the atmosphere if rules other than those which have been provided by RSFSR laws on protecting the atmosphere, are established in an international treaty of the RSFSR.

Chairman of the Presidium of the RSFSR
Supreme Soviet M. Yasnov

Secretary of the Presidium of the RSFSR
Supreme Soviet Kh. Neshkov

Moscow, Kremlin, 14 July 1982

Decree of the RSFSR Supreme Soviet on the Procedure for Implementing the RSFSR Law "On Protecting the Atmosphere"

In connection with the adoption of the RSFSR law "On Protecting the Atmosphere", the Supreme Soviet of the Russian Soviet Federated Socialist Republic resolves:

1. To implement the RSFSR law "On Protecting the Atmosphere" on 1 November 1982.

2. To establish that the RSFSR law "On Protecting the Atmosphere" is applicable to relations which arise after the implementation of the law, that is, after 1 November 1982.

In the legal relationships which arise before the implementation of the RSFSR law "On Protecting the Atmosphere", the exercise of the rights and duties of the participants in these legal relationships is regulated from 1 November 1982 in accordance with the mentioned law.

3. The rules, which are contained in the RSFSR law "On Protecting the Atmosphere" and which have been established by the USSR law "On Protecting the Atmosphere",

are applicable from the day of the implementation of the USSR law, that is, from 1 January 1981, in accordance with the decree of the USSR Supreme Soviet dated 25 June 1980 entitled "On the Procedure for Implementing the USSR Law 'On Protecting the Atmosphere'" (VEDOMOSTI VERKHOVNOGO SOVETA SS No 27, 1980, Art. 529).

4. The harmful effects on the atmosphere, which are mentioned in Article 14 of the RSFSR law "On Protecting the Atmosphere" and for which the appropriate norms have not been established, may be permitted temporarily after the implementation of the law until permits for these affects are obtained in the prescribed manner if they shall not be forbidden by the specially empowered state bodies.

5. To establish that the agreements on the conditions for discharging pollution substances into the atmosphere, which were issued before the implementation of the RSFSR law "On Protecting the Atmosphere", remain in force until the expiration of the period stipulated during the issuance of these agreements if an earlier period for obtaining the permits, which are provided by the first part of Article 15 of the law, has not been determined in the prescribed manner or a basis for limiting, halting or banning discharges has not arisen.

6. In accordance with Article 5 of the USSR Supreme Soviet decree dated 25 June 1980 entitled "On the Procedure for Implementing the USSR law 'On Protecting the Atmosphere'", enterprises, establishments and organizations, whose activity is linked with the discharge of pollution substances into the atmosphere and which are not equipped with the structures, equipment and gear which are mentioned in Article 32 of the RSFSR law "On Protecting the Atmosphere" and with systems for checking on the amount and composition of discharged pollution substances by the time of the implementation of the USSR law "On Protecting the Atmosphere", are to be equipped with them in accordance with the state plans for economic and social development in a manner determined by the USSR Council of Ministers.

7. In accordance with Article 6 of the USSR Supreme Soviet decree "On the Procedure for Implementing the USSR Law 'On Protecting the Atmosphere'", enterprises, establishments and organizations, which have stationary sources of pollution, must develop and coordinate with the specially empowered bodies for state control over the protection of the atmosphere plans for lessening discharges, which provide for the observance of the norms for the maximum permissible concentrations of pollution substances in the atmosphere in areas where the content of pollution substances in the atmosphere exceeds the norms for the maximum permissible concentrations at the time of the implementation of the USSR law "On Protecting the Atmosphere". During the realization of the mentioned plans, the specially empowered state bodies have a right to temporarily establish coordinated quantities for discharges of pollution substances.

8. To entrust the Presidium of the RSFSR Supreme Soviet with bringing the laws of the RSFSR into agreement with the RSFSR law "On Protecting the Atmosphere".

9. The RSFSR Council of Ministers with bringing the decision of the RSFSR government into agreement with the RSFSR law "On Protecting the Atmosphere".

Chairman of the Presidium of the RSFSR
Supreme Soviet M. Yasnov

Secretary of the Presidium of the RSFSR
Supreme Soviet Kh. Neshkov

Moscow, Kremlin, 14 July 1982

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PRESIDIUM DECREE ON ANIMAL PROTECTION, UTILIZATION

Moscow VEDOMOSTI VERKHOVNOGO SOVETA ROSSIYSKOY SOVETSKOY FEDERATIVNOY SOTSIALISTICHESKOY RESPUBLIKI in Russian No 29, 22 Jul 82 pp 646-661

[Law No 1029 of the RSFSR Supreme Soviet Presidium on Protecting and Using Animals and Decree No 1030 on the Procedure for Implementing the RSFSR Law "On Protecting and Using Animals"]

[Text] Law of the Russian Soviet Federated Socialist Republic on Protecting and Using the Animal World.

The animal world is one of the primary components of the natural surroundings and an important component part of our motherland's natural riches. It serves as a source for obtaining industrial and medicinal raw materials, food products and other material valuables which are required to satisfy the needs of the population and the national economy. The animal world is also used for scientific, cultural, enlightenment, and esthetic purposes.

The Constitution of the USSR and the Constitution of the RSFSR make provisions for the necessary measures to protect and use the animal world in a scientifically sound and rational manner to be taken in the interest of the present and future generations of the USSR, which the Russian Soviet Federated Socialist Rebpulic has joined with the other union republics on the basis of voluntary union and equality. These measures are being implemented in accordance with the state plans for the economic and social development of the USSR and the RSFSR and with the active participation of state and public organizations and citizens.

Soviet laws have been called upon to contribute to the effective protection and rational use of the animal world and to the rearing of the Soviet people in the spirit of a proprietary and humane attitude toward the animal world.

Section I. General Provisions

Article I. The tasks of RSFSR laws on protecting and using the animal world.

The tasks of the Russian Soviet Federated Socialist Republic's legislation on protecting and using the animal world are: regulating public attitudes on protecting and using wild animals in order to insure the conditions for their existence in a state of natural freedom, preserving the integrity of their natural associations and rational use, and strengthening legality in this area.

Article 2. The laws of the USSR and the RSFSR on protecting and using the animal world.

The laws of the USSR and the RSFSR on protecting and using the animal world consist of the USSR law "On the Protection and Use of the Animal World" and the other legislative acts of the USSR which have been published in accordance with it, and the present law and other legislative acts of the RSFSR concerning the protection and use of the animal world.

The laws on protecting and using the animal world regulate relations in the area of protecting and using the wild animals (mammals, birds, reptiles, amphibians, fish, shell fish, insects, etc.) which dwell in a state of natural freedom on dry land, in the water, atmosphere, and soil; which permanently or temporarily inhabit the country's territory; or which are related to the natural riches of the USSR continental shelf.

Relations in the area of using and protecting agricultural and other domestic animals as well as wild animals who are kept in captivity or in semi-free conditions for economic, cultural,scientific, esthetic, and other purposes, are regulated by the appropriate laws of the USSR and the RSFSR. Responsibility for a violation of the rules on protecting, keeping and using the above mentioned animals is prescribed by the law of the USSR and the RSFSR.

Article 3. State (public) ownership of the animal world in the USSR.

In accordance with the USSR law "On Protecting and Using the Animal World", the animal world in the Union of Soviet Socialist Republics is state property -- the common property of all Soviet people.

Actions, which directly or secretly violate the law of state ownership of the animal world in the USSR, are forbidden.

Article 4. The competency of the USSR in the area of regulating relations concerning the protection and use of the animal world.

In accordance with the USSR law "On Protecting and Using the Animal World", the following are within the jurisdiction of the USSR in the area of regulating relations in the protection and use of the animal world:

1) Direction of the animal world within the limits necessary for exercising the authority of the USSR in accordance with the Constitution of the USSR;

2) Determination of general measures and establishment of primary propositions, rules and norms in the area of protecting and using the animal world;

3) Development and approval of union-wide plans for the protection and rational use of the animal world;

4) Establishment of a single system for the USSR for the state stock-taking of animals and their use and of a procedure for conducting the state cadastre of the animal world;

5) State control over the protection and use of the animal world and establishment of a procedure to carry it out;

6) Solution of other questions of a union-wide significance in the area of protecting and using the animal world in accordance with the Constitution of the USSR and the USSR law "On Protecting and Using the Animal World".

Article 5. The competency of the RSFSR in the area of regulating relations concerning the protection and use of the animal world.

The following are within the jurisdiction of the Russian Soviet Federated Socialist Republic in the are of regulating relations concerning the protection and use of the animal world regardless of the limits of the competency of the USSR: direction of the animal world on the territory of the republic and establishment of a procedure to protect and use it; development and approval of republic plans to protect and rationally use the animal world; exercising of state control over the protection and use of the animal world; and the solution of other questions in the area of protecting and using the animal world if they do not pertain to the competency of the USSR.

Article 6. The competency of the autonomous Soviet socialist republics in the area of regulating relations concerning the protection and use of the animal world.

The following are within the jurisdiction of the autonomous Soviet socialist republics in the area of regulating relations concerning the protection and use of the animal world regardless of the limits of the competency of the USSR and the RSFSR: development and carrying out of measures to protect and rationally use the animal world; participation in the planning to protect and rationally use the animal world; the exercising of state control over its protection and use; and the solving of other questions in the field of protecting and using the animal world in accordance with the laws of the USSR, the RSFSR and the autonomous republics.

Article 7. State control in the area of protecting and using the animal world.

In accordance with the USSR law "On Protecting and Using the Animal World", state control in the area of protecting and using the animal world is carried out by the USSR Council of Ministers, the RSFSR Council of Ministers, the councils of ministers of the autonomous republics, the executive committees of local councils of peoples deputies, specially empowered state bodies for the protection and regulation of the use of the animal world, and other state bodies in accordance with the laws of the USSR and the RSFSR.

Article 8. Specially empowered state bodies for the preservation and regulation of the use of the animal world.

The specially empowered state bodies for the protection and regulation of the use of the animal world on RSFSR territory are the USSR Ministry of the Fish Industry, the Main Administration of Hunting and Game Preserves of the RSFSR Council of Ministers, and other specially empowered organs in accordance with the laws of the USSR and the RSFSR.

Article 9. The competency of executive committees of local councils of peoples deputies for state control in the field of protecting and using the animal world.

On their territory, the executive committees of local councils of peoples deputies within the limits and procedures which have been established by USSR legislation, the present law, and other legislative acts of the RSFSR: insure the development and carrying out of measures to protect and rationally use the animal world; participate in planning the protection and rational use of the animal world; exercise state control over its protection and use; and solve other matters connected with state control in the area of protecting and using the animal world.

Article 10. The planning of measures to protect and rationally use the animal world.

The tasks and measures to protect and rationally use the animal world are provided for in the state plans for economic and social development.

The drafts of the plans to protect and rationally use the animal world, which have been developed by the ministries, state committees and departments, enterprises, establishments, and organizations, are coordinated with the specially empowered state organs for the protection and regulation of the use of the animal world in the manner established by the laws of the USSR and the RSFSR.

Article 11. The obligation of fulfilling the measures to protect and rationally use the animal world.

The measures, which have been provided for by the plans to protect and rationally use the animal world on the territories of the autonomous republics, krays, oblasts, and large industrial centers and on the territory of the RSFSR as a whole, are subject in accordance with the laws of the USSR to fulfillment by the enterprises, establishments and organizations which are subordinate to the ministries and state committees and departments of the RSFSR; and by the enterprises, establishments and organizations of the all-union and union republic ministries and state committees and departments of the USSR.

Article 12. The basic requirements for the preservation and use of the animal world.

When planning and carrying out measures, which can affect the environment in which the animals live and the condition of the animal world, the observance of the following main requirements must be assured:

Preservation of the specific variety of animals in a condition of natural freedom;

Preservation of the surroundings in which the animals live, the conditions for their multiplications and their migration paths;

Preservation of the integrity of the animals' natural associations;

Scientifically sound and rational use and reproduction of the animal world;

Regulation of the number of animals in order to preserve the health of the population and to prevent a loss to the national economy.

Article 13. The participation of public organizations and citizens in the carrying out of measures to protect and use the animal world.

The professional unions, youth organizations, the environmental protection society, the societies of hunters and fisherman, scientific societies and other public organizations as well as citizens provide help to the state organs in carrying out the measures to protect and rationally use the animal world.

The public organizations participate in the work, which is aimed at insuring the protection and rational use of the animal world, in accordance with their regulations (statutes) and the laws of the USSR and the RSFSR.

In providing assistance to the state bodies in carrying out the measures to protect and rationally use the animal world, the citizens participate in the performance of the required work, make suggestions about improving the protection and rational use of the animal world, and report violations of the laws on protecting and using the animal world, which are known to them.

The state bodies are required to thoroughly consider the proposals of public organizations and citizens when carrying out measures to protect and rationally use the animal world.

Article 14. Public inspectorates.

Public inspectorates may be created to assist state bodies in protecting the animal world.

The statutes on public inspectorates are approved in the manner established by the laws of the USSR and the RSFSR.

Section 2. Use of the Animal World

Article 15. Users of the animal world.

In accordance with the USSR law "On Protecting and Using the Animal World", the users of the animal world may be state, cooperative and other public enterprises, establishments, and organizations as well as citizens of the USSR.

In cases which are provided for by the laws of the USSR and the RSFSR, the users of the animal world may also be other organizations and persons.

Article 16. The ways of using the animal world.

When observing the requirements which have been prescribed by the laws of the USSR and the RSFSR, the following ways to use the animal world may be carried out:

1) Hunting;

2) Fishing, including the catching of aquatic invertebrates and sea mammals;

3) The catching of animals which are not related to the objects of hunting and fishing;

4) The use of the animal world for scientific, cultural, enlightenment, educational, and esthetic purposes;

5) The use of the beneficial features of the animals vital activity -- soil formation, natural cleansing of the environment, pollination of plants, etc.;

6) The use of animals in order to obtain products from their vital activity.

Other types of animal usage may also be provided for by the laws of the USSR and the RSFSR.

Article 17. Conditions for the use of the animal world.

The periods for performing the individual types of animal usage are established in the manner defined by the laws of the USSR and the RSFSR. Use of the animal world is free of charge. The laws of the USSR and the RSFSR can establish cases and procedures for using the animal world for a fee.

Article 18. Hunting.

The industrial catching of wild animals and birds as well as amateur and sports hunting are carried out in the prescribed manner.

Article 19. Management of hunting.

The right to manage hunting on hunting lands can be granted to state, cooperative and other public enterprises, establishments and organizations. The mentioned enterprises, establishments and organizations are required to perform measures for the protection and reproduction of the wild animals on these lands.

The right of managing hunting within the definite limits of the hunting lands is granted for a period of no less than 10 years based on a biological and economic investigation of the hunting lands for their subsequent hunting management arrangement and organization.

The state, cooperative and other public enterprises, establishments and organizations, on whose lands hunting areas are located, are required to assist the enterprises, establishments and organizations, which are managing hunting in these areas, in the implementation of measures to organize the management of hunting, protect and breed wild animals and birds.

Article 20. Rules for hunting and managing hunting.

The rules for hunting and managing hunting are established in the manner which is determined by the laws of the USSR and the RSFSR.

Article 21. Fishing.

The industrial catching of fish, the catching of aquatic invertebrates and sea mammals, and the amateur and sports catching of fish and catching of aquatic invertebrates are carried out in the manner prescribed.

Article 22. The industrial catching of fish and the catching of aquatic invertebrates and sea mammals.

The right to manage the the industrial catch of fish and the catching of aquatic invertebrates and sea mammals in the industrial sections of fish-farm water bodies can be granted to state, cooperative and other public enterprises, establishments and organizations. The mentioned enterprises, establishments and organizations are obliged to carry out measures for the protection and reproduction of the fish, aquatic invertebrates and sea mammals in these sections of the water bodies.

Article 23. Rules for fishing for and catching aquatic invetebrates and sea mammals.

The rules for fishing for and catching aquatic invetebrates and sea mammals are established in the manner determined by the laws of the USSR.

Article 24. The catching of animals which are not the subjects of hunting and fishing.

The catching of animals, which are not the subjects of hunting and fishing, is authorized for enterprises, establishments, organizations, and citizens.

Lists of the types of animals, which are not the subject of hunting and fishing and whose catching is done only with the permission of the specially empowered state bodies for protecting and regulating the use of the animal world, and lists of those types of animals, whose catching is forbidden, are determined in the manner defined by the laws of the USSR and the RSFSR.

Article 25. Using the animal world for scientific, cultural, enlightenment, educational and esthetic purposes.

The use of the animal world for scientific, cultural, enlightenment, indoctrinational and esthetic purposes (by means of various forms of observation, marking, photographing, etc.) without removing the animals from their natural surroundings is permitted, if this does not inflict harm upon the animals or their dwelling place and does not violate the rights of other users of the animal world, with the exception of cases where this use is forbidden.

The use of the animal world for scientific, cultural, enlightenment, indoctrinational, and esthetic purposes is also permitted with the removal of the animals from their natural surroundings in the manner prescribed by the USSR law "On Protecting and Using the Animal World", other USSR legislative acts, the present law, and other RSFSR legislative acts.

Article 26. Using the beneficial features of the animal's vital activity.

Using the beneficial features of the animal's vital activity -- soil formation, natural cleansing of the environment, pollination of plants, etc. -- is permitted without removing animals from their natural surroundings, except for cases which are defined in the procedure established by the laws of the USSR and the RSFSR.

Article 27. Using animals to obtain the products of their vital activity.

Using animals in order to obtain the products of their vital activity (honey and wax from wild bees, etc.) is permitted only without removing and destroying the animals and without violating the surroundings of their dwelling places.

The rules for using animals to obtain the products of their vital activity are established by the specially empowered state bodies for protecting and regulating the use of the animal world.

Article 28. Regulating the number of animals.

Measures are taken to regulate the number of individual types of wild animals in order to protect the health of the population, protect agricultural and other domestic animals against illnesses, and prevent losses to the national economy.

Measures to regulate the number of individual types of animals must be carried out by humane methods which prevent the causing of harm to other types of animals and by methods which insure the safekeeping of the surroundings in which the animals live.

The types of animals, whose number is subject to regulation, and the procedure for carrying out measures to regulate their number are determined by the specially empowered state organs for protecting and regulating the use of the animal world with a consideration for the conclusions of the appropriate scientific organization and in coordination with interested state and public organizations.

Article 29. The rights of users of the animal world.

Enterprises, establishments, organizations and citizens have the right to make only those types of uses of the animal kingdom which they are permitted to.

In cases and in the manner which has been prescribed by the laws of the USSR and the RSFSR, the rights of users of the animal world can be limited for state interests and also in the interests of other users of the animal world.

Article 30. The duties of users of the animal world.

Depending on the type of use, users of the animal world are obliged to:

observe the prescribed rules of, norms and periods for using the animal world;

use the animal world in a manner which does not permit violations of the integrity of the natural association and which insures the preservation of animals which have not been allocated for use;

not violate the surroundings in which the animals live;

take stock of the number and condition of the animals being used and also of the condition of the surroundings in which they live;

carry out the necessary complex measures which are aimed at the reproduction of the animal world;

provide every possible assistance to the state and other bodies which are exercising control over the protection and use of the animal world;

take steps to create the necessary conditions for the protection and reproduction of rare and endangered species of animals.

The users of the animal world are also required to carry out the other requirements in the protection, reproduction and use of the animal world which have been provided for by the laws of the USSR and the RSFSR.

Article 31. The bases for suspending rights to use the animal world.

The right to use the animal world is subject to suspension either completely or partially in cases of:

1) The passing of the need for use or the repudiation of it;

2) The exploration of the prescribed period for use;

3) The origination of a need to withdraw from use subjects of the animal kingdom in order to protect the animals;

4) The elimination of an enterprise, establishment and organization which had been given the right to use them.

The right to use the animal world can also be suspended in a case where the user fails to follow the prescribed rules, norms and other requirements concerning the protection and use of the animal world.

Other bases for suspending the right to use the animal world can be provided for by the laws of the USSR and the RSFSR.

In the cases which have been provided for by paragraphs 1, 3 and 4 in the first part and by the second part of the present article, the right to use the animal world is suspended by the appropriate bodies annulling the permits which have been issued by them.

Section 3. Protection of the Animal World.

Article 32. Measures to protect the animal world.

The protection of the animal world is insured by:

1) Establishing rules and norms for protecting, rationally using and reproducing the animal world;

2) Imposing bans and limitations on the use of the animal world;

3) Protecting against the unwarranted use and other violations of prescribed procedures for using the animal world;

4) Protecting the environment in which the animals live, their reproduction conditions and migration paths;

5) Preventing the death of animals when carrying out production processes;

6) Creating game preserves and restricted areas and by setting aside other specially protected areas;

7) Breeding rare and endangered species of animals;

8) Limiting the taking of animals for zoological collections;

9) Helping animals when they are sick or threatened by death during natural disasters and as a result of other reasons;

10) Organizing scientific research aimed at substantiating measures to protect the animal world;

11) Instilling in citizens a humane attitude toward the animal world;

12) Publicizing the protection of the animal world through the mass information media;

13) Carrying out other measures and establishing other requirements for the protection of the animal world.

Article 33. Material and moral incentives to carry out measures to protect the animal world.

Material and moral incentives for enterprises, establishments, organizations, and citizens, which stimulate the carrying out of measures to protect the animal world, can be established by the laws of the USSR and the RSFSR.

Article 34. Imposing limitations and bans on the use of the animal world.

For the preservation and reproduction of animals, the carrying out of individual types of uses of the animal kingdom and the use of individual types of animals can be limited or completely banned on a certain territory or for certain periods in the manner prescribed by the laws of the USSR and the RSFSR.

Article 35. Protecting the surroundings in which animals live, their reproduction conditions and migration paths.

Any activity, which affects the condition of the animal world by disrupting the surroundings in which the animals live, their reproduction conditions and migration paths, must be carried out by observing requirements which insure the protection of the animal world.

When siting, planning and constructing population centers, enterprises, structures and other installations; when improving existing and incorporating new technological processes; when putting virgin lands, swampy areas, and coastal areas covered with bushes into economic circulation; when reclaiming land; when using forests; when conducting geological survey operations; when mining useful minerals; when determining the sites of pastures and wells for agricultural animals; when developing tourist routes; and when setting up places for the mass rest of the population, measures must be provided for and carried out to protect the surroundings in which the animals live and their reproduction conditions, and the inviolatability of sections, which had special value as places where animals live, must be insured.

When siting, planning and constructing railroad, highway, pipeline and other transport mainlines; electrical transmission and communication lines; canals; dams and other hydrotechnical installations, measures which insure the preservation of the animal's migration paths must be developed and carried out.

Article 36. Coordinating the construction sites of enterprises, structures and other installations which affect the condition of the animals.

The construction sites of enterprises, structures and other installations which affect the condition of the animal world by disrupting the surroundings in which the animals live, their reproduction conditions and migration paths, are coordinated with the specially empowered state bodies for protecting and regulating the use of the animal world and with other bodies in accordance with the laws of the USSR and the RSFSR.

Article 37. Preventing the death of animals when performing production processes and operating transport systems.

Enterprises, establishments, organizations and citizens are required to take steps to prevent the death of animals when performing agricultural, logging and other operations and when operating transport systems.

The burning of dry vegetation and the storage of materials, raw materials and production wastes without carrying out prescribed measures to prevent the death of animals are forbidden.

Article 38. Protecting animals in game preserves, restricted areas and in other specially protected areas.

Hunting, fishing, the catching of aquatic invertebrates and sea mammals, as well as other types of using the animal world and other activity which are not compatible with the goals of preserving game, are forbidden on the territory of game preserves.

The carrying out of certain types of animal uses and other activity, which is not compatible with the goals of protecting the animal world, can be completely banned or limited in restricted areas and in other specially protected areas.

The procedure for protecting and using the animal world in game preserves, restricted areas and other specially protected places is established by the laws of the USSR and the RSFSR.

Article 39. Protecting rare and endangered species of animals.

In accordance with the USSR law "On Protecting and Using the Animal World", rare and endangered species of animals are entered in the books of rare and endangered species of animals and plants -- the USSR Red Book and the RSFSR Red Book. The statute on the USSR Red Book is approved in the manner defined by the USSR Council of Ministers, and the statute on the RSFSR Red Book -- in the manner defined by the RSFSR Council of Ministers.

Actions, which can lead to the death and a decrease in the number of rare and endangered species of animals or to the disruption of the surroundings in which they live, are not permitted.

Article 40. Measures to preserve rare and endangered species of animals.

In order to preserve rare and endangered species of animals whose reproduction is impossible under natural conditions, the specially empowered state bodies for protecting and regulating the use of the animal world must take steps to create the necessary conditions for the breeding of these species of animals.

Article 41. The procedure for catching rare and endangered species of animals.

The catching of rare and endangered species of animals for breeding under specially created conditions and their subsequent return to freedom and for scientific research and other purposes is permitted in accordance with a special permit issued by the specially empowered state bodies for protecting and regulating the use of the animal world.

Article 42. Zoological collections.

The creation and replenishment of zoological collections (the live collections of zoological parks, zoological gardens, aquariums, etc., as well as in the form of collections of stuffed animals, samples and parts of animals) by enterprises, establishments and organizations by removing the animals from their natural environment specifically for these purposes are permitted in accordance with permits issued by the specially empowered state bodies for protecting and regulating the use of the animal kingdom.

The replenishment of zoological collections, which are the private property of citizens, and the creation of new collections by citizens are forbidden with the exception of collections which consist of hunting and fishing trophies and other types of animal uses which are carried out in accordance with prescribed requirements.

Zoological collections, which have scientific, cultural,enlightenment, training, indoctrinational, or esthetic value, are subject to state registration. The enterprises, establishments, organizations, and citizens, which are the owners of these collections, are required to observe the rules for storing, registering and using the collections of animal world subjects.

In accordance with the USSR law "On Protecting and Using the Animal World",the rules for creating, replenishing, storing, using, and registering zoological collectives, the rules for trade by zoological collectives; and the rules for sending and exporting the items in the collection and the products of the animal world abroad are approved in the manner prescribed by the USSR Council of Ministers.

Article 43. Protecting animals during the use of plant protection means, growth stimulators, mineral fertilizers and other preparations.

The requirements for protecting the animal world and the surroundings in which the animals live must be taken into consideration when using plant protection resources, growth stimulators, mineral fertilizers, and other preparations which are used in the national economy. In order to decrease their harmful effect on the animal world, the use of chemical plant protection measures and other preparations must be combined with the carrying out of agrotechnical, selective genetic, biological, and other measures.

In order to prevent the death of animals and the deterioration of the surroundings in which they live, kolkhozes, sovkhozes, forest farms, and other enterprises, establishments, organizations, and citizens are required to observe the rules for transporting,storing and using these preparations.

When creating new preparations, standards for the maximum permissible concentration of them in the environment -- standards which insure the protection of animals and the surroundings in which they live -- must be developed.

The rules for using plant protection systems, growth stimulators, mineral fertilizers and other preparations which are used in the national economy, as well as the list of these preparations, are subject to coordination with the specially empowered state bodies for protecting and regulating the use of the animal world.

Article 44. The movement, acclimatization and cross-breeding of animals.

The movement of animals to new dwelling places, the acclimatization of animal species which are new to USSR fauna, and animal cross-breeding measures are permitted for scientific research and economic purposes with a consideration for the conclusions of the appropriate scientific organizations and in accordance with the permission of the specially empowered state bodies for protecting and regulating the use of the animal world.

The unwarranted movement, acclimatization and cross-breeding of animals is forbidden.

Article 45. Limiting the rights of and imposing obligations on the users of natural resources in order to protect the animal world.

In order to protect the animal world, the rights of users of the land, the forest, the water, and mineral riches can be limited and appropriate duties can be imposed upon them in the manner established by the laws of the USSR and the RSFSR.

Section 4. State Registering of Animals and the State Cadastre of the Animal World

Article 46. State registering of animals and their use and the state cadastre of the animal world.

In order to provide for the protection and to organize the rational use of the animal kingdom, a state registry of animals and their use is performed and a state cadastre of the animal world, which consists of all the information on the geographical distribution of the animal species (species groups), their number, the characteristics of the land required by them, the characteristics of the present-day economic use of animals, and other necessary information, is conducted.

Article 47. The procedure for the state registering of animals and their use and for the conducting of a state cadastre of the animal world.

In accordance with the USSR law "On Protecting and Using the Animal World", the state stock-taking of animals and their use and the conducting of a state cadastre of the animal world are accomplished at state expense according to systems which are common for the USSR.

Enterprises, establishments and organizations are required to submit the information available to them on the diffusion, number and use of wild animals to the organs which are conducting the state cadastre of the animal world.

The rules for the state stock-taking of animals and their use, for conducting the state cadastre of the animal kingdom for determining the lists of animal species (specie groups) which are subject to the state accounting and to inclusion in the state cadastre, and for submitting information for the stock-taking and conducting of the cadastre are approved in a manner prescribed by the USSR Council of Ministers.

Section 5. Control Over the Protection and Use of the Animal World

Article 48. State control over the protection and use of the animal world.

State control over the protection and use of the animal kingdom has as its task the insuring of the performance by all ministries; state committees and departments; state, cooperative and other public enterprises, establishments and organizations; and citizens of their duties in protecting the animal world and their observance of the prescribed procedure for using the animal world and of the other rules established by the laws on protecting and using the animal world.

Article 49. The bodies which exercise state control over the protection and use of the animal world.

State control over the protection and use of the animal world is carried out by the councils of peoples deputies, their executive and administrative bodies, and the specially empowered state bodies for protecting and regulating the use of the animal world in a manner prescribed by the laws of the USSR.

Article 50. Exercising state control over the protection and use of the animal world.

The specially empowered state bodies for protecting and regulating the use of the animal world check on:

the observance of the rules, norms, periods, and other requirements for protecting and using the animal world;

the observance of the prescribed procedure for the state registry of animals and their use and for the conducting of the state cadastre of the animal world;

the correctness and timeliness in developing and carrying out measures to preserve the surroundings in which animals live, their reproduction conditions and migration paths.

The specially empowered state bodies for protecting and regulating the use of the animal world have the right to:

halt the unwarranted use of the animal world and also uses, which are being carried out by violating prescribed rules, norms, periods, and other requirements for the protection and use of the animal world;

issue mandatory instructions on eliminating violations of the rules, norms, periods, and other requirements concerning the protection and use of the animal world;

halt operations, whose conduct systematically violates the rules, norms, and other requirements concerning the protection and use of the animal world and the protection of the surroundings in which the animals live, their reproduction conditions and migration paths until the violations have been eliminated;

institute proceedings in the prescribed manner against violators of the rules, norms, periods, and other requirements concerning the protection and use of the animal world or send the material on their violations to the appropriate bodies.

The specially empowered state bodies for protecting and regulating the use of the animal world can be granted other rights to prevent and stop violations of the rules, norms, and other requirements concerning the protection and use of the animal world by laws of the USSR and the RSFSR.

Article 51. The obligation to carry out the rules and instructions of the specially empowered state bodies for the protection and regulation of the use of the animal world.

The rules and instructions of the specially empowered state bodies for the protecting and regulating the use of the animal kingdom, which have been approved within the rights established by the laws of the USSR and the RSFSR, are binding for execution on all ministries, state committees and departments, enterprises, establishments, organizations, and citizens.

Article 52. Departmental control over the protection and use of the animal world.

Departmental control over the protection and use of the animal world is carried out by the organs under whose jurisdiction the enterprises, establishments and organizations, which are using the subjects of the animal world, are located.

When exercising departmental control, the ministries, state committees and departments are required to be guided by the laws of the USSR and the RSFSR and the rules and instructions which have been approved by the specially empowered state bodies for protecting and regulating the use of the animal world.

Section 6. Solving Disputes Concerning Questions on Using the Animal World

Article 53. The procedure for solving disputes concerning questions on the use of the animal world.

Disputes between enterprises, establishments, organizations, and citizens on matters pertaining to the use of the animal world are solved in a manner prescribed by the laws of the USSR and the RSFSR.

Section 7. Responsibility for a Violation of the Laws on Protecting and Using the Animal World.

Article 54. The invalidity of agreements which violate the right of state ownership of the animal world.

The unwarranted giving up of the right to use subjects of the animal world and other agreements, which openly or secretly violate the right to state ownership of the animal world, are invalid.

Article 55. Responsibility for a violation of the laws concerning the protection and use of the animal world.

Persons who are guilty of concluding deals, which are mentioned in Article 54 of the present law, and who are guilty of:

the unwarranted use of subjects of the animal world;

a violation of the rules concerning hunting, fishing and other types of use of the animal world;

a violation of the rules on protecting the surroundings where the animals live and their migration paths;

the unwarranted movement, acclimatization and cross-breeding of animals;

a violation of the rules on using plant protection systems, growth stimulators, mineral fertilizers, and other preparations which cause harm to the animal world;

a violation on the rules for sending and exporting the subjects of the animal world and zoological collections abroad;

committing actions which have led to the death, a decrease in the number, or the disruption of the surroundings in which the animal species, which are listed in the RSFSR Red Book, live;

are criminally , administratively or otherwise responsible in accordance with the laws of the USSR and RSFSR.

Responsibility for other violations of the laws concerning the protection and use of the animal world can also be prescribed by laws of the USSR and the RSFSR.

Article 56. Compensation for the harm caused by a violation of the laws concerning the protection and use of the animal world.

Enterprises, establishments, organizations and citizens are required to compensate for the damage caused by a violation of the laws concerning the protection and use of the animal kingdom in the amounts and manner prescribed by the laws of the USSR and the RSFSR. The officials and other workers, due to whose fault the enterprises, establishments and organizations incurred the expenses which were connected with compensating for the loss, are materially responsible in the manner prescribed.

Illegally caught animals and the products obtained from them are subject to removal in the manner prescribed by the laws of the USSR and the RSFSR.

When it is impossible to remove the illegally caught animals and the products obtained from them, their cost is exacted in accordance with prices which are established by the laws of the USSR and the RSFSR.

Section 8. International Treaties.

Article 57. International treaties.

If other regulations than those, which are contained in Soviet laws concerning the protection and use of the animal kingdom, have been prescribed by an international treaty of the USSR, then the rules of the international treaty are applicable.

The same procedure is applicable in regards to the RSFSR laws concerning the protection and use of the animal world if rules other than those prescribed by RSFSR laws on the protection and use of the animal kingdom, have been prescribed in an international treaty of the RSFSR.

Chairman of the Presidium of the RSFSR
Supreme Soviet M. Yasnov

Secretary of the Presidium of the RSFSR
Supreme Soviet Kh. Neshkov

Moscow, Kremlin, 14 July 1982

Decree of the RSFSR Supreme Soviet on the Procedure for Implementing the RSFSR Law "On Protecting and Using the Animal World"

In connection with the adoption of the RSFSR law "On Protecting and Using the Animal World", the Supreme Soviet of the Russian Soviet Federated Socialist Republic resolves:

1. To implement the RSFSR law "On Protecting and Using the Animal World" on 1 November 1982.

2. To establish that the RSFSR law "On Protecting and Using the Animal World" is applicable to those relations which arise after the implementation of the law, that is, after 1 November 1982.

In the legal relationships which arise prior to the implementation of the RSFSR law "On Protecting and Using the Animal World", the exercise of the rights and duties of the participants in these legal relationships are to be regulated in accordance with the mentioned law beginning on 1 November 1982.

3. The rules, which have been established by the USSR law "On Protecting and Using the Animal World" and which are contained in the RSFSR law "On Protecting and Using the Animal World", are applicable from the date of the implementation of the USSR law, that is from 1 January 1981, in accordance with the decree of the USSR Supreme Soviet dated 25 June 1980 entitled "On the Procedure for Implementing the USSR Law 'On Protecting and Using the Animal World'"(VEDOMOSTI VERKHOVNOGO SOVETA SSR, No 27, 1980, Art. 531).

4. To charge the Presidium of the RSFSR Supreme Soviet with bringing RSFSR laws into accordance with the RSFSR law "On Protecting and Using the Animal World".

5. The RSFSR Council of Ministers:

with determining the procedure for approving the RSFSR Statute on Public Hunting Inspectorates;

with bringing the decision of the RSFSR government into accordance with the RSFSR law "On Protecting and Using the Animal World".

Chairman of the Presidium of the RSFSR
Supreme Soviet M. Yasnov

Secretary of the Presidium of the RSFSR
Supreme Soviet Kh. Neshkov

Moscow, Kremlin, 14 July 1982

8802
CSO: 5000/16

SOCIALIST APPROACH TO ECOLOGICAL PROBLEMS LAUDED

Vilnius SOVETSKAYA LITVA in Russian 15 Sep 82 p 2

[Article by V. Kortunov, doctor of historical sciences, political observer of press agency Novosti: "Socialist Approach to Solving Ecological Problems"]

[Text] The history of interrelationships of man with nature is a type of paradox. On the one hand, our dominance over the elemental forces of nature is constantly rising, and fear of them is replaced by sensible forecasts and realized transformation of the climate of whole regions. On the other hand, this dominance is becoming more illusionary. The victory often becomes defeat, and at the end of the 20th century, man is faced with the most evil spectre of ecological apocalypse.

The scientist speaks of different variants for possible ecological catastrophe awaiting mankind. One of them focuses attention on the steady increase in the percentage in carbon dioxide in the earth's atmosphere. This process, they believe, in the next decades can convert the earth into a greenhouse absorbing considerably more solar energy than today. Others assert that the earth is threatened not by an increase, but a decrease in temperature which is becoming an inevitable consequence of the growing dust content in the earth's atmosphere. Others say that the main threat is not the change in temperature, but the destruction of the ozone screen in the strat sphere of earth. The main screen which can be destroyed by flights of supersonic airplanes, protects people and animals from ultraviolet radiation.

One could cite many other, no less sinister forecasts. But it is clear that there is an unequivocal answer to the question of whether man is threatened by an ecological catastrophe: yes he is. It is much more important to clarify how this catastrophe can be prevented. However it is much more difficult to find here an unequivocal answer.

Ecology and the Social Structure

Is there a link between ecological problems and social-economic structure? The bourgeois scientists most often negate it. The ecological crisis, they assert, is a consequence of purely economic and not social processes. The Marxists believe that one can only discuss the problem of the economical crisis from class positions. It is primarily necessary to answer the question of who specifically bears primary responsibility for environmental pollution.

Large enterprises which in the West are in the hands of private owners are generally oriented on obtaining the maximum profit with the minimum outlays. Consequently, ecological requirements objectively and inevitably are thrown by the board of the economic system of capitalism, since the products become more expensive and they are made less competitive.

Practice shows what the attempts to solve ecological problems without a desire to gain profit can lead to at times. Under pressure of the public, the United States in recent years, for example, has created highly effective means of monitoring the quality of the air basin and the internal waters, as well as equipment for controlling environmental pollution. However, the increase in ecological standards in the United States namely resulted in a drastic deterioration in the ecological situation in a number of developing countries where the American monopolies transferred the most "dirty" industries.

The concept of introducing new economic mechanisms for monitoring the quality of the environment has been widely discussed recently in the scientific circles of the Western countries. A universal tax, the introduction of rent payments with each economic unit for the use of nature must become the core of this monitoring. This would make it possible to transform the "external cost" of society into "internal" outlays of the private producers. But in practice, this approach may result in a new flight of consumer prices under the pretense of increasing the "ecological costs."

In order to prevent ecological catastrophe, the western scientists have presented the requirements to limit the economic growth. But this approach is utopic, and essentially only detracts from the true solution of ecological problems.

New Approach to Ecological Problems

One of the lessons of the current ecological problems is an understanding that the nature surrounding us is a very complicated, and not yet completely studied system whose functioning depends on all of its components . Since this is so, environmental protection in order to produce positive results must be comprehensive and systematic.

Socialism from this viewpoint has undoubted advantages over capitalism. Private ownership extremely impairs the comprehensive approach to ecological problems if it does not altogether exclude it. Only the socialist state can effectively regulate the use of nature and environment protection. It has a precise plan for functioning of social productive forces and completely controls their development.

The importance of environmental protection is secured in the most important legislative acts of the Soviet state. The USSR constitution notes: "The citizens of the USSR are obliged to guard nature, and preserve its riches" (article 67).

The Soviet environmental protection program, and this is its significant advantage over the majority of estern countries, is distinguished by consistency and constancy. From the first days of Soviet power we have conducted long-term and broad-scale measures for restoration and protection of the natural resources of the country, reducing to a minimum the unfavorable consequences of production activity. It is not out of place to recall that the Soviet Union was the first country in the world where scientifically substantiated, maximum permissible standards for concentration of harmful substances in the atmosphere were first developed.

In recent years the USSR Supreme Soviet has adopted a number of important laws aimed at protecting the environment from effects harmful for it: "Fundamentals of Land Legislation of the USSR and Union Republics," "Fundamentals of the Legislation of the USSR and Union Republics Regarding the Depths," "Fundamentals of Water Legislation of the USSR and Union Republics," and others. The government of the USSR has also issued a number of decrees on measures for further improvement in environmental protection and the efficient use of natural resources, in particular for the protection of the Caspian, of Black and Azov basins of the Volga and Ural rivers.

But to issue a law is still little in order to help nature. It is necessary to reinforce it with solid capital investments. Here we again must speak about the advantages of the socialist system. In 1976-1980 the Soviet state allocated over R 26 billion for environmental protection measures.

The USSR State Committee for hydrometeorology and monitoring of the environment plays a large role in environmental protection. It has its own territorial administrations and centers to monitor pollution of the environment in the entire country. The powers of the committee are very significant. For example, according to the results of the ecological examination, over 300 enterprises were moved beyond the limits of Moscow, and now other productions which do not pollute the atmosphere are in there former structures. In planning enterprises, ecological expertise is mandatory.

The development of new territories in the north and east of our country raises new ecological problems which in their scales do not have a precedent in world practice. For example, the development of the zone of the Baykal-Amur Trunkline under construction alone should result in an increase in the population of Siberia several times, the development of large industrial centers, and the working of mineral fields. At the same time it is known that ecological balances in the northern regions are especially unstable and the slightest lack of caution can result here in the most fatal consequences.

One of the important forms of protecting environment under conditions of economic development of the new territories is the creation of state preserves which become a type of reference for natural ecological complexes. Today we have 136 state preserves. They occupy 11 million hectares. By the end of the current five-year plan, another 20 preserves will be created. In addition there are 1,500 sanctuaries where in contrast to the preserves, not the entire natural complex, but only individual elements are under special protection (vegetation, all or some species of animals etc.).

The experience of the USSR in environmental protection graphically demonstrates the advantages of the comprehensive approach to the ecological problem whcih makes it possible to develop a strategy of economic development which would not result in irreparable destruction of the environment. This experience also indicates that the ecological problem is nevertheless primarily a social problem, and its solution is only possible based on deep social transformation of society.

9035
CSO: 5000/14

OFFICIALS' STATEMENTS REFLECT ENVIRONMENTAL POLICY CHANGE

Hamburg DER SPIEGEL in German 11 Oct 82 p 23

[Text] Within 2 days after being sworn in, CSU Minister of the Interior Fritz Zimmermann introduced an abrupt change in constitutional state, environmental and foreign policies. during a discussion with all department heads last Wednesday, the new chiefs, parliament secretaries Carl-Dieter Spranger (CSU) and Horst Waffenschmidt (CDU), supported by the old civil servants Guenther Hartkopt (FDP) and Siegfried Froehlich (CSU supporter), prepared the government declaration of domestic policy. Hartkopf excelled as executor of the new team.

He reported what Chancellor Helmut Kohl is to pronounce as measure against dying forests. He stated vaguely that air pollution caused by sulfur dioxide is to be reduced. The head of planning, Klaus Thomsen, found this to be too weak: Zimmermann's predecessor Gerhart Baum had already decided on maximum allowable levels. Said Thomsen: "400 mg has been named. Don't you want to name this?" Hartkopf looked questioningly to his colleagues who did not show any reaction. Then Hartkopf aid: "Yes, good, then we will name it."

The head of environmental policy, Peter Menke-Glueckert (FDP), reacted happily: "It is most important that the continuity of the environmental policy is emphasized. Spranger answered: "We don't want this continuity. It is precisely this insecurity caused by the environmental policy that we want to put a stop to. It is because of this insecurity that the young voters have deserted us to join the environmentalists."

When Hartkopt said, somewhat perplexed, that parameters for sulfur dioxide pollution are to be taken "as had been discussed," Thomsen spoke again: "Now you did not take into consideration what Mr. Spranger has said. As I understand him, he wants to see a precise demonstration of the difference between the new and the old environmental policy."

Spranger nodded agreement, and Hartkopf added: "Yes, the old policy was not reliable because something new was happening at the time."

Thomsen answered: "Then you should inform the vice chancellor, who is probably interested in seeing how the continuity is protrayed by three FDP ministers."

9328
CSO: 5000/2509

GOVERNMENT COMMISSION TO TEST, APPROVE CHEMICAL SUBSTANCES

Stockholm SVENSKA DAGBLADET in Swedish 29 Sep 82 p 8

[Article by Claes-Göran Kjellander]

> [Text] No later than this fall the government will appoint a poisons and chemicals commission. Within a specified time it will coordinate the work on increasing control over the use of chemicals.

The chemicals commission will work in about the same way as the energy commission in its time. This means among other things that both scientists and politicians will be represented on the commission. Its function will be to provide a basis for decisions, but it will not have any executive powers itself.

The idea of a poisons and chemicals commission has long been entertained among the Social Democrats, and has been presented in several party resolutions.

Control in Advance

One of the most urgent tasks is considered to be getting control of chemical substances and products in advance, before they are put into practical use. For such a control to be put into effect, the public will have to have laboratory resources that are lacking today.

It will therefore be the task of the commission to find out what changes will have to be made for the authorities to cope with the job of checking out new products.

One prerequisite for product control, however, is a complete product register. Year after year the Social Democrats have subjected the non-socialist governments to sharp criticism on the ground that the product register is going too slowly.

An obligatory check in advance would mean that all products that are not on the register must go through an analysis at the manufacturer's or importer's expense. The analysis would clarify what health risks are connected with the product, and provide information to the hygiene authorities and the user by a code marking in the product register.

The Social Democrats have also pushed several environmental questions very hard during their time in the opposition. This applies among other things to the rules for forest spraying and for lead content of gasoline.

It is uncertain whether the party will now get the Riksdag to change the rules on forest spraying for the fourth time in 2 years. The big forest owners have now adapted to the dispensing rules that the Riksdag introduced last spring to be effective during 1982, and another change would cause great problems.

8815
CSO: 5000/2507

BILL WOULD INCREASE PENALTIES FOR SHIPS DISCHARGING OIL

Stockholm SVENSKA DAGBLADET in Swedish 30 Sep 82 p 5

[Article by Claes Löfgren]

[Text] Tougher penalties await owners of vessels that discharge oil in Swedish waters. Fines of nearly half a million kronor can be assessed in case of illegal discharges.

The bill to amend the water pollution law has now been submitted to the Law Council. It provides among other things that:

- The vessel's owner can be subjected to high fines.
- The fines range between 5,000 and 400,000 kronor depending on the size of the discharge.
- The Coast Guard or the National Administration of Shipping and Navigation can forbid vessels to leave port to confirm evidence and guarantee that fines imposed are paid.

Under the present legislation it is hard to make the shipping companies responsible for oil and chemical discharges. In practice that has never been done. Instead, relatively light fines have been imposed on the officers and/or crew of vessels caught in illegal discharges.

First Mate Convicted

The law was made more severe a few years ago, so that those responsible for the discharge could be sentenced to up to 2 years' imprisonment. But so far imprisonment has been allotted in only one case. The first mate of a Greek vessel was sentenced to 1 month for having pumped out 75 tons of heavy oil in the Askerö Fjord on the west coast.

In other cases the penalties for oil and chemical discharges have been fines of a few thousand kronor. With the proposed changes it is hoped that the government can now frighten both Swedish and foreign shippers into obeying the law.

Negligence or Intent

A study by the UN maritime agency IMCO [Inter-Governmental Maritime Consultative Organization] shows that only about a third of the world's oil discharges occur in connection with shipwrecks. The rest--over 1 million tons of oil--is discharged either because of negligence or quite consciously in order to reduce the time in port and consequently the costs.

Two consultative bodies--the bar association and the shippers' association--considered the bill unnecessary. They feel that the intentional discharges are so slight that their damaging effects on the environment are hard to prove. The lawyers and shippers also say that the present legislation is quite adequate. Making the law more severe would not reduce the discharge.

The reason--according to the two consultative bodies--is that the risk of detection is so slight. Illegal discharges often take place under cover of fog and darkness. A study of discharges in American waters claims that only some 20 percent of all illegal discharges are detected. Instead it is argued that the coast guard should be given increased resources for a more effective patrol by boat and by air.

Discharges Due to Oil Shipments Worldwide

Cause of Discharge	Amount in Tons	Percent
Tank cleaning	709,000	47
Tank cleaning in connection with stay at shipyard	34,000	2
In connection with loading, unloading, bunkering	40,000	3
Discharge of ballast and bilge water	314,000	21
Shipwrecks	406,000	27
TOTAL	1,503,000	100

The table shows that purely intentional oil discharge together with discharge as a result of negligence accounts for nearly 70 percent of the total.

Source: IMCO (maritime organization of the United Nations)

Shipping Company Responsible

The bill also makes the shipping company responsible if adequate measures are not taken in connection with an accident that causes oil discharge.

In the mid 1970's an Argentine dry-cargo vessel ran aground off the Danish coast on the Öresund side. Fifty tons of heavy oil leaked out of the fuel tanks and no attempt was made to clean up the oil. The discharge caused polluted beaches, ruined fishing gear, and death of sea birds along the stretch of coast between Helsinki and Kiel.

The clean-up cost the state 0.5 million kronor. The captain was given fines of 15 kronor a day for 100 days. Under the proposed changes in the law the Argentine shipping company could also have been held responsible.

When the Law Council has had its say the government will write a bill. Some time in November the Riksdag will decide on it.

8815
CSO: 5000/2507

'ACID RAIN' IS CATALYST FOR ARSENIC DISCHARGES

Stockholm SVENSKA DAGBLADET in Swedish 17 Oct 82 p 8

[Text] Acidification has created an environmental threat and a health hazard around 30-50 old impregnation works for telephone poles, railroad sleepers, etc. The fields around each of them contain at least 10 tons of arsenic, which will now have to be released from the acid rain.

The National Swedish Nature Conservancy Board is right now in the process of studying the risks. A final report is expected to be ready by the end of the year. However, as a result of information which has become available, Eksjo municipality, among others, which has an impregnation works at Hjaltevad, has decided to examine the local well-water.

High Content in Puddles

The groundwater around the impregnation works has turned out to contain 2.8 milligrams of arsenic per liter. Rain water puddles in the vicinity were found to contain up to 6 milligrams per liter.

The limit value set by the World Health Organization WHO for arsenic in drinking water is 0.05 milligrams per liter. The Swedish limit value is now at 0.20 milligrams, but an adjustment to the WHO value has been discussed.

Fields, too, are full of arsenic. The soil around the impregnation works at Stromsholm southwest of Vasterås contains 300-3,000 milligrams of arsenic per kilogram, a total of approximately 10 tons.

It is a question of old impregnation works from the forties. New impregnation works, built according to the building codes of 1978, do not present the same environmental threats.

The Swedish Nature Conservancy Board is now also studying counter-measures. Liming does not solve the problem. The polluted soil may be removed, alternatively, ways of rebinding the arsenic more permanently to the soil of the fields may be tested.

7262
CSO: 5000/2511

STOCKHOLM POLICE CRACK DOWN ON EXCESS CARBON MONOXIDE FROM CARS

Stockholm SVENSKA DAGBLADET in Swedish 19 Oct 82 p 10

[Article by Henrik Ekman]

> [Text] Warning to all motorists with excess carbon monoxide levels in their exhaust emissions. The carbon monoxide police patrols of Stockholm have gone into action. The result: considerably higher carbon monoxide levels than at the official motor vehicle inspections.

Since its initiation, the crackdown has resulted in a busy week. At five locations, officers of the Environmental Conservancy Board have been testing the exhaust emissions of motor vehicles checked by the police patrols.

The officers of the Environmental and Public Health Board will find out whether vehicles observe the limit values set for carbon monoxide (CO) levels also at other times of the year than at the annual inspections.

"Of course, we always hear of people readjusting their carburetors after leaving the motor vehicle inspection station," says Ingemar Josefsson, commissioner of the Environmental Conservancy Board (Social Democrat).

The cooperation started by the municipal authorities of Stockholm with the traffic police appears to confirm this impression. The carbon monoxide levels of a larger number of motor vehicles have been found to exceed the limit values than at the inspections carried out by the Swedish Motor Vehicles Inspection Company.

Crackdown South of Stockholm

Last Monday, action was taken at the Circular Road at Tantolunden. In a parking area, two technicians of the Environmental Conservancy Board were standing next to a large number of traffic police officers.

After the police had carried out its usual checks of lights, brakes, tires, and driver's licences, the motor vehicles were directed to proceed to the carbon monoxide testing area. A cord was inserted into the exhaust pipe, and the result appeared immediately on the instrument in the bus. The needle showed with relentless precision whether the motor vehicle would be approved, whether attention would have to be called to its level of carbon monoxide or whether it would have to be directed to a motor vehicle repair shop.

A total number of 37 motor vehicles were inspected at the Circular Road check point. The four previous check-point inspections--at Majrovagen, Alvsjovagen, Vårbergsvagen and Soder Malarstrand--comprised between 130 and 140 motor vehicles. That is a far too small number for any definite conclusions to be drawn from it. The aim is to inspect a total number of 1,000 vehicles. Nevertheless, some results may be mentioned.

Roughly, between 30 and 40 percent of the motor vehicles inspected were found not to come up to the standard required, i.e. the levels of carbon monoxide in their exhaust emissions were found to exceed 4.5 percent. Although the limit value has been set at 4.5 percent, it has been the practice for motor vehicle inspectors merely to draw the attention of motorists to levels up to 7 percent. Only above that level will the motor vehicle be subject to re-inspection.

According to the initial material gathered by the 'Carbon Monoxide Police,' 24-31 percent of the motor vehicles examined had levels of carbon monoxide between 4.5 percent and 7 percent. A total number of 10 percent had even higher levels.

The motor vehicles checked at the Circular Road followed the same trend.

The above figures may be compared to the statistics for 1981 published by the Swedish Motor Vehicles Inspection Company, Inc. Here, only 11 percent of the motor vehicles examined had levels of carbon monoxide above 5.5 percent (no statistics is available on the number of motor vehicles with levels above the 4.5 percent). Only 3.2 percent of these vehicles had levels of carbon monoxide in their exhaust emissions above the 7 percent level when leaving the Swedish Motor Vehicles Inspection Company, Inc.

The present carbon monoxide levels are thus considerably higher than the levels recorded for a long time by the carbon monoxide inspection patrols.

"It is our aim that motorists become aware of their exhaust emissions throughout the year," Ingemar Josefsson says. "If there is a risk that their motor vehicles may run into a check-point inspection and be rejected, they may want to ask their repair shops to take a look at their carbon monoxide levels as well when they bring their motor vehicles in for repairs."

7262
CSO: 5000/2511

END

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Worldwide Report

ENVIRONMENTAL QUALITY

No. 380

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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10 December 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 380

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AUSTRALIAN AIR POLLUTION NO THREAT TO NEW ZEALAND

Wellington THE EVENING POST in English 15 Oct 82 p 5

[Text]

Air pollution from Australia that reaches New Zealand is not much to worry about at present, an Australian scientist, Dr E K Bigg, said at the Meteorological Society Conference today.

"The rain does not become acid enough to be a worry to agriculture at the moment," he said.

Dr Bigg, who studies clouds physics in Sydney, said a background air monitoring programme was established by the Australian Government in 1976 on the north-west coast of Tasmania.

Because Sweden had suffered pollution problems from air passing over Britain, it seemed desirable to check whether New Zealand was receiving appreciable air pollution from Australia, he said.

With the help of the New Zealand Meteorological Service, measurements of particle concentrations and rainwater acidity and chemistry were started at New Plymouth in September last year.

New Plymouth was chosen because it was on nearly the same latitude as the Australian monitoring station.

The results had shown that concentrations of particles were generally higher at New Plymouth than in Tasmania during prolonged westerly winds, providing that the air had passed over part of mainland Australia.

Otherwise, concentrations were comparable.

The rainfall was consistently more acidic than at the Tasmanian site.

However, until the occasions when local sources could influence the result were removed from the analysis, it was uncertain whether this was an Australian influence.

In any case, the acidity was at present no threat to the environment and because of its sulphate nitrate and ammonium content might, indeed, be beneficial.

There were only a small number of occasions when New Plymouth got fully contaminated air from Australia.

This might have a subtle effect on the weather, but that was something future investigations would show more clearly.

CSO: 5000/9082

DROUGHT IN VICTORIA POSES THREAT OF DUST STORMS, EROSION

Melbourne THE AGE in English 4 Oct 82 p 3

[Article by Carol Sides]

[Text] Victorians could soon see a repeat of dust storms which in the 1940s drought blacked out daylight and terrified rural communities, soil conservation authorities believe.

The authorities and some farmers believe the worst effects of the drought are only just beginning to appear. Ultimately the drought could cost Australians far more than their sheep flocks and cereal crops.

At risk are thousands of hectares of soil which conservationists predict could take up to 30 years to replace.

A Buckrabanyule farmer, Mr Laurie Douglas, said that even modern farming techniques stood little chance of preventing a re-farmers had only heard about. His far, 16 kilometres north-east of Charlton, is in the heart of one of the State's first shires to be declared a drought area.

"The complete blackout of dust was a frightening experience that has stayed with me for 38 years," he said. "You only had to be a few yards from the house to be engulfed in darkness.

"The experts have said a thing like that would never happen again. But there is no doubt the whole countryside will lift." Heavy rain, which would inevitably come with summer storms, would pulverise the soil and leave it like talcum powder to be blown away by winds," he said.

He said ground exposed by grazing and crop failures was most vulnerable to summer rain. In a big downpour, large drops of rain hit the soil, destroying its structure and breaking it down further.

Mr Douglas has made his farm a showplace for soil conservation measures. In 1978 he won the Hanslow Cup soil conservation competition. In the past 20 years has continued an erosing control programme started by his brother in 1947 to bring back to production large tracts of land that was sheet eroded, rilled and gullied.

Record floods in the district this time last year severely tested the Douglas erosion control works. Today the Buckrabanyule Hill block and thousands of hectares of central Victoria are being prepared for the destructive combination of drought and wind.

An officer of the Soil Conservation Authority, Mr Denis Martin, based at St Arnaud, said yesterday farms could lose up to 12 centimetres topsoil through erosion whipped up by wind. The effect was compounded by sand and soil ending up in waterways and covering roads. Cropping paddocks would not recover from the effect for up to 30 years, he said.

Thousands of hectares of land were exposed to the risk of erosion by lack of cover caused by failed crops and stock grazing. Farmers had only recently started asking for help to prevent wind erosion, but there was a shortage of manpower, he said.

Finance for soil conservation in Victoria has dropped in real terms in the past five years. According to the annual report of the Soil Conservation Authority, grants for soil conservation works declined even in money terms from $1.2 million in 1977-78 to $1.05 million in 1980-81. This year's Budget allocation is $1.7 million.

Mr Douglas said a diligent farmer would prevent wind erosion by ridging his soil. By using a chisel plough he could produce windbreaks across the paddocks to catch soil particles carried on

"I hope this drought will bring home to Government the importance of our soil," he said. "Once we lose that we lose the lifeblood of the rural economy. "It is a heritage we have to hold on to."

CSO: 5000/7509

EDITORIAL URGES FRASER TO STOP DAM ON TASMANIAN RIVER

Melbourne THE AGE in English 6 Oct 82 p 13

[Text]

MOST Premiers would be flattered to have an area of their State nominated for inclusion on the World Heritage List. But not the Tasmanian Premier, Mr Gray. In recent weeks he has been campaigning hard to have the Federal Government withdraw its nomination for the wilderness area of south-west Tasmania. Mr Gray thinks that the environmental significance of this region of mountainous rainforest and river valleys has been "grossly overstated". As far as he is concerned, the Franklin River — part of which his Government plans to dam for a hydro-electricity project — is for 11 months of the year "nothing but a brown ditch, leech-ridden and unattractive to the majority of people".

The Prime Minister, Mr Fraser, to his credit, has resisted the Tasmanian Government's pressure. He has said he has no intention of backing down. Regrettably, however, Mr Fraser has refrained from taking the next step which is to assert the Federal Government's supremacy over the area — a move that would effectively stop the despoliation to which the Tasmanian Government is so blindly and stubbornly committed. Politically, of course, such a move would cause problems. The Liberals presently hold all five House of Representatives seats, and Mr Fraser would obviously not want to do anything which might jeopardise them.

But he can't sit on the fence for ever. Sooner or later events will force him and his Government to take a stand. If he needs encouragement to do so, he can find it in the AGE POLL, published this week, which showed that while there is still widespread public uncertainty on the dam issue, only 24 per cent of Australians positively support the building of the Franklin dam while 39 per cent positively oppose it. More to the point perhaps, 49 per cent of Australians believe the Federal Government should intervene to stop the Franklin being flooded and the dam built, as against 37 per cent who oppose Federal intervention.

Mr Fraser can also take comfort from the advice given to him recently by the Federal Attorney-General's Department that the Commonwealth does indeed have the constitutional power to override the Tasmanian Government on the dam-building issue. This being so, Mr Fraser should take his courage in his hands and announce his Government's intention to take over the wilderness area and to maintain it, like the Barrier Reef, as a national park. Outside Tasmania that would be regarded generally as a wise and statesmanlike decision. As Mr Fraser has said himself, the south-west of Tasmania is "an irreplaceable asset", and as such should be preserved intact for future generations. It won't be if Mr Gray and his power-crazy engineers are allowed to have their way unchecked.

CSO: 5000/7509

INJUNCTION ISSUED AGAINST LOGGING; PROTESTERS ARRESTED

Canberra THE WEEKEND AUSTRALIAN in English 2-3 Oct 82 p 3

[Text] THE NSW Land and Environment Court yesterday granted an injunction, preventing further logging of rainforest at Mt Nardi, in the north of the State.

Mr Justice Cripps ruled that no more trees be felled until Tuesday morning, when a full hearing will begin.

Two anti-logging protesters were injured and 29 were arrested in clashes with police and sawmillers before the injunction was granted at 3.30 pm.

Sixty-one people have been arrested since logging began at Mt Nardi, in the proposed Nightcap National Park, on Wednesday morning. They have been charged with a variety of offences.

A spokesman for the Nightcap Action Group, Mr Bren Claridge, said the two injured protesters were taken to hospital with suspected broken legs. One was injured when a police vehicle ran over his leg, and the other when a logging truck ran over his foot.

About 200 protesters have set up camp on a private property adjoining the disputed logging area.

The Nightcap Forest adjoins Terania Creek Forest, the site of a violent dispute between loggers and conservationists three years ago.

After an 18-month, one-million-dollar inquiry, Mr Simon Isaacs, QC, recommended that no more than 6 per cent of the remaining unlogged area be logged.

CSO: 5000/7509

LAKE COLEMAN'VIRTUALLY DEAD,' VICTIM OF INDUSTRIAL WASTE

Melbourne THE AGE in English 4 Oct 82 p 3

[Article by Rosslyn Beeby]

[Text] Twenty-five years ago, Lake Coleman, near Sale, was a small, clear lake with white sandy beaches and abundant bird life. Now, it is virtually dead, its waters black and polluted by industrial effluent from the Dutson Downs sewer-

Dead trees line the shores of the lake, choked by poisonous, foam-encrusted sludge. Bird life is scarce and only introduced fish species such as European carp survive in the ovygen and light-deprived waters.

A wildlife artist, Charles McCubbin, who lives near Lake Coleman, says he has seen its waters so discolored that a white disc submerged in a few centimetres of water is invisible.

Mr McCubbin, a leading expert on Australian water insects, claims Lake Coleman is the State's, possibly the ntion's, worst instance of water pollution.

"This lake is a graphic illustration of what would happen to the world if the Sun stopped shining," he says.

"Light can't penetrate the surface of the lake, which prevents photosynthesis. The water weeds die, the insects which depend on the water weeds have gone, and that means the native fish are unable to survive. The whole intricate web of life is broken."

The problem is getting steadily worse, with large areas of the the Gippsland lakes under threat of pollution from the Dutson Downs effluent, Mr McCubbin says.

Since 1957, effluent from the sewage farm has flowed into the Gippsland Lakes via Lake Coleman at the rate of about 15,000 megalitres a year. Industrial waste from the Australian Paper Manufacturers mill at Maryvale accounts for19 of the 20 megalitres a day of waste, which is treated at the farm.

The APM waste is highly colored by lignin, a toxic substance that occurs in the cellular structure of wood. Its exact chemical composition is unknown, as is the full extent of its toxicity.

Dutson Downs's waste discharge licence is controlled by the Latrobe Valley Water and Sewage Board, a delegated agency of the Environment Protection Authority. Under its licence, the farm has been allowed until 1991 to reduce the color of effluent discharged to Lake Colemban from 18,000 color units (near black) to 250 (the color of weak tea).

APM has undertaken construcwaste treatment system and will tion of a $40 million in-plant stop discharging liquid waste to Dutson Downs by 1987.

But local environment activists still want the board to spell out its waste-disposal strategies more clearly. The farm's licence was amended by the EPA this year, but the rate of waste discharged to Lake Coleman remains unspecified in the amended conditions. There is also no regulation compelling disposal of waste water by on-farm irrigation.

Mr Herb Guyatt, a founder of the Lakes Awareness Committee, claims metering wheels have "disappeared" from points where the effluent is discharged into Lake Coleman. He claims that contrary to EPA licence conditions, the weekly volume of waste discharged is neither measured nor recorded.

The Minister for Conservation, Mr Walker, has described the pollution of the Lake Wellington wetlands and Lake Coleman as a very serious situation needing urgent consideration.

CSO: 5000/7509

AUSTRALIA

SOLVENTS POSE STERILITY, OTHER RISKS TO CHEMICAL WORKERS

Melbourne THE AGE in English 6 Oct 82 p 6

[Article by Philip McIntosh]

[Text] Thousands of Australian workers may be exposed to chemical solvents suspected of being hazards to the reproductive system, a trade union occupational health unit has warned.

The hazards include potential sterility or reduced fertility in men and possible menstrual disorders in women. Exposure of both men and women could lead to birth deformities.

"Both male and female workers are potentially at risk, and exposure by any route, including inhalation and through the skin, may be hazardous," the health unit said.

The chemicals are from a class of solvents known as glycol ethers.

A hazard alert on the solvents has been issued by the occupational health and safety unit of the ACTU and the Victorian Trades Hall Council.

A member of the unit, Dr John Mathews, said the two chemicals concerned, 2-methoxy ethanol and 2-ethoxy ethanol, were solvents with numerous industrial and consumer uses.

He said 2-methoxy ethanol was used as a solvent for many materials including dyes, resins, lacquers, varnishes and stains. It was also used as a perfume fixative and as a de-icing additive in jet fuel.

He said 2-ethoxy ethanol was used in lacquers, in the dyeing and printing of textiles, in varnish removers, cleaning solutions and products for the treatment of leather, and as an anti-icing additive in aviation fuels.

Dr Mathews said particular attention should be focused on dyes, paints and industrial cleaning fluids, as these were the most likely sources of exposure.

A health and safety bulletin issued by the health unit said that as yet there had been no specific human studies. "But the strength and consistency of the animal experimental evidence makes it clear that human exposure should be dramatically reduced," it said.

"The relatively large number of workers with potential exposure to these glycol ethers is also cause for particular concern," the bulletin said.

Using United States figures as a base, the bulletin said the number of Australian workers likely to be exposed to 2-methoxy and 2-ethoxy ethanol should be in the order of 5000 and 21,000 respectively.

The ACTU has made a number of recommendations to its affiliates: that employers divulge whether the chemicals were now in use on their premises; if they were then substitutes should be sought; if no substitutes were available, exposure to the solvents should be reduced to the lowest technically feasible level.

The bulletin said ICI recently released a statement to customers alerting them to the potential adverse reproductive effects resulting from 2-methoxy and 2-ethoxy ethanol exposure.

CSO: 5000/7509

PRIVATE GROUPS URGE GOVERNMENT TO BAN DDT

Jakarta SINAR HARAPAN in Indonesian 25 Sep 82 pp 1,12

[Excerpts] The Consumer Affairs Institute (YLK) and the Indonesian Environmental Association (WAHLI) on 23 September called upon the government to ban the use of DDT immediately. There are in circulation in Indonesia hundreds of brands of DDT not recommended by the Insecticide Commission, and among them are brands that have not been tested at all.

Furthermore, the two organizations have evidence that on 28 August 12 people died in the village of Plaeng, Klaten, Central Java, as a result of DDT poisoning at a ceremonial meal.

This information was revealed to reporters at the Jakarta Press Club by Permadi SH, Engineer Erna Witoelar, and George Adicondro.

These two organizations fear that unless the government takes immediate action other fatalities will follow sooner or later. It has been discovered that producers of salt fish in Jakarta have sprayed DDT on fish being dried, and some vegetable farmers in Cipanas, West Java, and in Batu, Malang, have sprayed the poison on their produce.

According to leaders opposing DDT, the insecticide is also widely used against mosquitoes, and research shows that such use is a threat to human life.

DDT reportedly is no longer used in the industrialized nations because of evidence of its danger. There is therefore surprise in those countries that the use of DDT has not been banned in Indonesia.

There is a surplus of DDT in Indonesia, not because of excessive domestic production but because of exports of the poison by industrialized countries. The surplus of DDT in Indonesia is the output of chemical factories in Europe and the United States since there is no further market for DDT in those countries.

DDT from the United States flows freely into Indonesia through official aid channels. From 1969 to 1974 alone, Indonesia received an average of more than $1 million for the purchase of DDT and other insecticides. YLK and WALHI view as strange the fact that, although Indonesian imports of DDT have reached about 4000 tons per year and are not being used for original purposes, the government still plans to build a DDT plant. The government's justification is that there are abundant raw materials from our petrochemical industry,

YLK and WALHI feel that because of the unrestricted distribution of DDT in rural areas and the existence of many pest control companies it is likely that DDT will enter human food supply in vegetables and fruits, and, through cattle feed, into milk and beef.

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CSO: 5000/8002

MARCOS ACTS TO STOP BAY POLLUTION

Manila PHILIPPINES DAILY EXPRESS in English 14 Nov 82 pp 1, 6

[Text] President Marcos issued yesterday a series of directives to put an end to the dumping of wastes into the Manila Bay which, he said, causes marine pollution and therefore undermines the national development efforts.

The President's move was triggered by complaints from people earning their livelihood along the bay that indiscriminate dumping of wastes has not only caused the dwindling of marine life along the coastal waters but also poses a serious hazard to communities along the bay.

The President directed the Metropolitan Waterworks and Sewerage System to set up immediately a sewage treatment plant on a five-hectare lot in the Tondo reclamation area.

The President also ordered the MWSS to make a study of other sites in Metro Manila where sewage treatment plants may be set up to sanitize waste before it is dumped into the bay.

At the same time, the President directed the MWSS to speed up the cleaning of all public and private septic tanks in Metro Manila.

The MWSS has scheduled operations to clean up, for free, about 300,000 septic tanks in Metro Manila.

However, the MWSS said, those who want priority in having their septic tanks cleaned will have to pay a minimal fee.

In a related action, the President directed the MWSS to stop contractors from using asbestos water pipes on the ground that they are believed to be carcinogenic, or cancer-causing.

The MWSS is conducting a study on the possible harmful effects of asbestos water pipes in the wake of public concern that they might cause cancer.

CSO: 5000/4304

BARBADOS

MOBIL LEAK POLLUTES BEACH, AROUSES CONSERVATIONIST ATTACK

Clean-Up Action

Bridgetown ADVOCATE-NEWS in English 30 Oct 82 p 1

[Text]

Gravesend Beach, St. Michael, and the adjacent sea, were polluted early yesterday by oily water coming from the nearby Mobil Oil Refinery.

The beach and sea became a messy sight, caused by the gallons of black, oily water which flowed into the sea from a storage tank which reportedly developed a leak during Thursday night.

But by late afternoon, the situation had been brought under control after a special task force of employees of the oil company carried out an intensive clean-up operation.

General manager of Mobil Oil Barbados Limited, Garrison, Mr. Massimo De Rose, said the situation was one which his company very much regretted, and was doing everything possible to have rectified as quickly as possible.

He said that he was still awaiting full details of the incident, but preliminary investigations had revealed that the damage to the sea and the beach was caused by the dirty, oily water which had leaked from a storage tank.

Mr. DeRose said that emulsionised asphalt was usually stored in the small tank, but there was presently a qualtity of dirty oily water in the tank, and as a result of the leak, the dirty water had ran through the gutter systems and made its way into the gutter that leads to the sea.

"It is not a stream of oil, but dirty water," said Mr. DeRose, as he sought to dispel rumours that it was more crude oil than water that had polluted the beach and the sea.

He said that when it was realised yesterday what had happened, immediate steps were taken to stop the leak, but since it was oily water that had flowed into the sea, the amount that went into the sea spread like quite a lot.

In cleaning up the area, the surface of the oil blackened sand was removed, and a chemical liquid was sprayed into the sea to destroy the oil on the water.

Mr. DeRose said that he had not been able to ascertain exactly how much water was in the tank, "but I do not thing it was any large amount," he added.

But the situation did not go down well with people wishing to use the beach. One such person, Lionel Brancker, of My Lord's Hill, St. Michael, who came to the Advocate-News with his complaint, said, "something has to be done to prevent this kind of thing from happening."

Mr. Brancker said that the oil companies were not paying enough attention to pollution of the sea and beach by their products, and added, "what happened at Gravesend beach should not have occurred."

He said that it was not the first time that he had seen the Gravesend beach in such a "filthy state." He said that "It was all polluted before, but yesterday is the first time I saw it that bad."

Conservation Group's Criticism

Bridgetown THE NATION in English 1 Nov 82 p 24

[Text]

CHAIRMAN of the National Conservation Commission, Iris Bannochie, has strongly condemned the incident of beach pollution at Gravesend. St. Michael. over the weekend.

"They (Mobil Barbados Limited) should fix it, and stop giving us this trouble," said Mrs. Bannochie who added that it was a problem caused by the company.

She noted that the commission had been fighting the issue for several years but to no avail, even though many letters had been written, and several meetings held.

"Some action will have to be taken by someone else," she said.

The chairman explained that the company had a drain which flushed oily water out to sea whenever there was heavy rain in the area. But she contended that the company should find an alternative place so that it would not cause the century-old gutter to overflow into the sea.

The oil spill was reported last Friday and it was to the extent where the oily substance was not only afloat in the sea, but made the beach a messy sight. Bathers were unable to use the beach since then.

Bannochie could not say when it would be comfortable for bathers to use the beach again, but she pointed out that her commission was hard at work to rectify the "unfortunate" situation.

A leak in a storage tank at the Mobil refinery at the Garrison was blamed for the oil slick.

According to Mobil's general manager, Massimo DeRose,a storage tank containing dirty water and some asphalt developed a leak in the early hours of Friday morning causing the contents to escape.

DeRose said it entered their gutter scheme and escaped into the sea. Normally the gutter would prevent anything that was floating from leaving the compound, but it apparently failed, he added.

When it was discovered, steps were immediately taken to correct the situation, and several workers using a special chemical dispersant to break down the mixture were employed to bring the situation under control.

CSO: 5000/7512

WATER POLLUTION REACHES HEALTH-THREATENING LEVELS

San Jose LA NACION in Spanish 15, 16, 17 Oct 82

[Article by Mayra Porras]

[15 Oct 82 p 1B]

[Text] A great deal has been said about the water problem. From time to time, whenever there is an epidemic or a disease caused by a virus, it is the same old story: Water must be boiled, hands washed before meals, and the endless recommendations known to everyone are repeated.

And yet, these are nothing but minor, and sometimes relatively ineffective, precautions when it is a problem of the polluted, unsafe water that has always been consumed by people living in the different urban areas of the country, a problem that has not been handled directly. It has been sidestepped, as if the danger facing these people could be put off.

We already see the consequences. Escazu, the most tragic example of the little attention paid to the quality of water, now leads the country with the most cases of hepatitis: 307 per 1,000 according to a study recently completed by the canton's health center.

"If we consider that for every case reported, at least three or four are not, then the figures clearly show that we are facing a veritable epidemic, undeniably caused by water."

These emphatic words of Dr Mauricio Vargas, director of the institution, give us an idea of the complexity of the matter and of the urgent need for a solution.

As if this were not enough, 80 percent of the people of Escazu are also suffering from parasites and 80 percent of all pregnant women are anemic. "It is incredible that only six kilometers from La Sabana, such things can occur without anyone's being bothered."

Swimming Against the Current

It cannot be denied that there have attempts to make improvements. A number of institutions would like to have carte blanche to change the water treatment system. But curiously enough, it is the people themselves who have refused. Dr Vargas attributes this phenomenon to the fact that under different administrations, the municipality has made a "warhorse" out of the "advantage" which its handling of the liquid constitutes.

"What they do not realize is that they may be saving a few pennies on their service, but how much is a life or disease caused by this irresponsibility worth?"

The Costa Rican Aqueducts and Sewer System Institute tried to take over water management a few years ago. The canton's response was to break the meters in protest of the meddling and the future potential rate increase.

The dilemma is now between the awareness of Escazu residents, the extremely poor service of the municipality, and the almost nonexistent possibility that another institution might take charge, especially due to the high cost involved, some 16 million colons.

In addition to the foregoing are the campaigns waged by the Ministry of Health which lead the people to think that boiling the water will ward off all the evils stemming from pollution.

"It is no secret to those who know that the hepatitis virus withstands high temperatures and that chlorinating the water solves nothing either, since certain bacteria and amoebas are not affected by the substance."

For his part, the municipal executive of Escazu, Rafael Angel Masis, spoke of a water commission. That commission is now trying to find short-, medium- and long-term solutions, inasmuch as it is highly concerned over the reports of intestinal diseases made to the health center.

But their idea of solving the problem goes no further than teaching the people "not to dirty the rivers." Masis says that at no time has the idea been considered of transferring the service to the Aqueducts and Sewer Institute. Commission members still believe that the institution makes business with water and that to have control of it is an advantage.

"We sincerely see no short-term solution," he says, thereby making it obvious that any attempt to change the situation is to swim against the current.

Revealing Tour

The idea of an inquiry into the water problem came from LA NACION, due to the constant reports of viral diseases. Since the problem was attributed to water, an order was issued for an analysis of the liquid from various urban areas with the idea that even if one sampling per place were not scientifically representative, the fact that even one had problems would show that the treatment system now used is not 100-percent safe.

As a result, Moravia, San Pedro, Desamparados, Escazu and San Rafael de Heredia were included in the microbiological analysis performed at the University of Costa Rica by the School of Microbiology.

Based on international standards, the water from the first three sites was classified as drinkable. But in the case of Escazu and San Rafael de Heredia, it was classified unsafe, due to the fact that it contained over 2 coliforms per 100 milliliters of water. Coliform bacilli are contaminated particles from the ground or fecal matter taken into account in analyses.

In San Rafael de Heredia, the total number of coliform bacilli found was 140 for every 100 milliliters of water, 70 of which were from fecal materials. In Escazu, the situation was even worse: Of the total number found, 1,600, 120 were of fecal origin. Although these results are not truly representative, they show that if, in a given place and on a given day, a water sampling yielded such conditions, then the situation does not look good.

This was obvious during a tour of water storage tanks in various places in Santa Ana and Escazu. No analysis is even needed, for the irregularities are so glaring that even the least perspicacious observer would realize the quality of water supplied to the people.

To begin with, only a few regions receive filtered, chlorinated water. The rest get water from pipes coming directly from the rivers, where the people even wash their clothes, bathe and dump garbage and waste matter, both physiological and of other kinds.

Those in charge of the tanks watch the sieves that strain out large objects such as stones, leaves and branches, but the incredible quantity of dirt and microorganisms is carried to the houses and the fact that such things are invisible makes the people think that the water is clean.

In addition, the places where the water is filtered use a fairly old process, that of "slow filters" mainly utilizing sand. But the big problem is that since this material is very expensive, ballast is substituted and it contains a large quantity of elements that not only do not purify water, but further pollute it.

It is not even necessary to go into the effects of the rainstorms in recent months. River waters are stirred up and no one is even surprised to see truly dirty, chocolate-colored water come out of the pipes.

Confronted with such a situation, how is it possible to continue to speak of the "advantages" of cheaper service, to question the possibility of transferring the service to more capable hands, to refuse to see the urgent need to solve an already old problem?

The relationship between the state of health of Escazu and the water ingested there clamors for a rapid decision from all organizations responsible for this alarming situation. And yet, nothing seems to have changed and children and adults continue to drink water that is 100-percent harmful.

The reports seem to get lost in the "turbid water" piped every day into the homes of an urban population that paradoxically enough is lacking in the most basic hygiene habits.

[16 Oct 82 p 1B]

[Text] The situation observed in Escazu and Santa Ana is almost identically the same in San Rafael de Heredia. There, although the analysis of the sampling taken for the study did not yield such high results, it cannot be denied that things are not good.

Actually, the data collected were to be expected when one considers that the water is the region is not treated in any way and that the rivers from which water is taken cover over 3 kilometers between cattle ranches and pastures, meaning that the river channels are polluted and more than once, animals of all kinds have been found in an advanced stage of decomposition.

Dr Arturo Romero, director of the San Rafael clinic, was surprised that the study did not have worse results. Actually, as we have already said, one sampling is not representative of the problem and only reveals the presence of major anomalies.

"In this area," the doctor explained, "the water distribution system is very old and it is certain that grey waters infiltrate the ground, only worsening the already exaggerated pollution."

Latent Epidemic

It is not at all unusual to see pieces of branches, leaves, all kinds of stones and even slugs come out of the pipes, but the worst of it is what no one sees: In an analysis made by clinic personnel, eggs of threadworms and other intestinal parasites were found.

This is the reason why 40 percent of all children under the age of 10 have parasites and most of these children are suffering from over two types of these microorganisms.

The danger of an epidemic caused by any kind of virus transmitted by water was shown a few months ago, with an outbreak of gastroenteritis that hit a large number of children. Some 250 were treated at the clinic and medicine was given to many more, representing an unexpected expenditure of 50,000 colons.

The fear of the clinic director, shared by most of those with any knowledge of the imminent danger, is that appearance of some serious disease that has been eradicated in Costa Rica by vaccination but that emerges due to the polluted water.

"We have never had proof that vaccinations are 100-percent reliable, because diseases such as polio are no longer seen. However, with all the foreigners coming in every day, water could become the prime carrier of any disease, afflicting us with a tragedy such as those seen in the old days."

But as if this were not enough, there is a water shortage in April and May, when the rivers nearly run dry because of the drought.

"Consequently, we are not only getting sick, but we have water for scarcely ten months of the year."

Solution

For Dr Romero, San Rafael de Heredia is running an unnecessary risk that could be avoided if the proper institutions assumed responsibility for the problem.

"It is indispensable to have the proper piping of rivers, build a new distribution and treatment system and to install meters in each house, without stopping to think that rates will be higher. We cannot compare the cost of a service with the price of lives that could be lost."

Furthermore, Dr Romero does not believe it is a good idea to set up clinics responsible for treating those that come to them with problems that could have been avoided.

Prevention is the best idea, according to Dr Romero. "Vaccinations have already done their job. Now it is the turn of environmental sanitation and and problem of water should occupy first place."

It is useless for the Ministry of Health to get rid of the parasites in the canton of San Rafael de Heredia two or three times a year if the basic problem is not attacked, which is the poor quality of the water ingested.

And yet, far from thinking about the most suitable solution, which transferring water to the Costa Rican Aqueducts and Sewer Systems Institute (A and A) would be, the municipality of San Rafael still thinks it is capable of providing the service, while it does consider some improvements necessary.

Gilbert Camacho, municipal executive, agrees that there is real concern over what is happening:

"The epidemic we have just had is the first in a long time. We have had so many problems with the water."

In order to reduce the ever present danger of a major epidemic somewhat, the water committee is determined to pipe about 2 kilometers of the river, although a loan of some 5 million colons would be needed to cover the approximate cost of the work.

However, this does not lesson the problem because it is above all a matter of the reeducation of the people, who for many years have lived in a healthy environment and who are now faced with unhealthy conditions without knowing what to do about them.

New Way of Thinking

Dr Leonardo Mata, director of the Health Research Institute (INISA), believes that at the present time, it is nearly impossible for public institutions to intervene, mainly for economic reasons, as a result of which he believes that the best short-term solution is to improve the technological knowledge of the people and reestablish proper health habits recently neglected.

"With a past filled with disease, the Costa Rican people have had decades of important improvements and we have forgotten many preventive measures, accustomed as we are to an environment free of microbes."

The official then points to the serious epidemic in San Rafael, which he visited, and believes that for every child treated, five did not go to the clinic.

"This problem is also seen in communities such as Escazu, where pure water was initially harnessed before the area became populated. It has now grown and industries, agriculture and livestock raising have florished, making those distribution systems obsolete."

Along with the education given to the people, Dr Mata believes it very important for communities to have good distribution, treatment and filtration of the water and at least add chlorine, if indeed there is no substitute for the sources of pure water no longer found.

"All of this will bring back the old habits of boiling water and milk, washing one's hands after going to the bathroom and before meals, and it would often be necessary to boil water used to wash food so as not to fall into the vicious circle of using dirty water for the purpose."

It is preferable not to eat raw vegetables, but rather, to cook them, preferably with steam.

These are only a few immediate and superficial solutions to the serious problem the people face so as to prevent, at least provisionally, the transmission of any virus.

However, officials agree on the vital importance of the people understanding that to be "penny wise" can be "pound foolish" and that they must fight to gain a basic right: safe water.

[17 Oct 82 p 1B]

[Text] In the face of the imminent danger which polluted water represents, it is of prime importance for the Costa Rican Aqueducts and Sewer Systems Institute to take over the service, or at least, give advice on and partially finance problems requiring the most immediate solution.

While the Rotatory Urban Aqueducts Fund (FRAU) was set up in that institution in 1979 and introduced some improvements in the worst services of different communities, the office is now practically without financing, making it very difficult to solve problems rapidly.

For his part, Walter Fabian, from the Ministry of Health, believes that independently of political problems, which have obten constituted obstacles, it is urgent for the Aqueducts and Sewer Systems Institute to intervene.

"However, we cannot ignore the fact that there are persons who cannot pay for services, no matter what they represent for their health."

This is perhaps one of the biggest impediments for these people, for which reason they do not want any improvement in the situation.

What Has Been Done

The head of that institution's Department of Studies and Projects, Napoleon Cruz, explains that until 1978, the Institute of Municipal Development and Consultation (IFAM) was in charge of financing the construction of aqueducts in communities.

However, IFAM did not have the technical resources to do proper work. Consequently, a year later, the FRAU was set up and legally allocated resources, partly including a loan granted by the Bank of America.

Proceedings were thus instituted in order to include 33 communities in the program, communities whose water intake and distribution systems no longer met minimum safety standards.

The function of the FRAU would be to finance the municipalities, make studies, draw up plans, build aqueducts and thus improve the situation, which was already becoming problematical.

Unfortunately, even with the "soft conditions" on which the projects were financed, with low interest rates and long terms, many communities could not afford the high investment needed in most places.

"Along with this initial problem, there were the local interests and politics, which prevented many communities from having an opportunity to improve their water, and therefore, health conditions."

Of the initial list, only San Isidro de Heredia, Heredia Centro, San Isidro de Coronado, Santo Domingo, San Rafael de Heredia, Ciudad Quesada, Las Juntas de Abangares, Cartago Centro, Grecia, Santa Ana, Osa and Tejar del Guarco could be helped.

According to information from Cruz, a total of over 43 million colons was invested, representing 84 percent of what was to be used for the purpose.

"The fact that all the initially programmed funds were not used is due to the administration's decision that it was more important to devote the money to other projects. Consequently, the program is now totally without funds and the institution is seeking new financing."

Specific Cases

Concerning the communities of Santa Ana and San Rafael de Heredia, Cruz said that there had been some improvements. A new distribution system, storage tanks, sand strainers and pipes had been built and put in in Santa Ana.

"Only the water treatment plant and the meters are now lacking. They would cost about 15 million colons to install."

For its part, San Rafael de Heredia must still complete its system, put in meters and look for new sources, since those existing are totally polluted. The cost would be some 5 million colons.

In Escazu, the case was different. It did not initially wish to join communities requiring the services of the FRAU and is therefore now on the waiting list. If it should find the money needed to continue the program, the canton would have to have a total overhaul and expansion of the water distribution, filtration and treatment system, costing over 10 million colons.

These three communities are lacking in the most important element: suitable purification of the water, since the time when the rivers were completely clean is long gone.

Something which also affected Escazu was the transfer of part of the aqueducts and sewer services, specifically those given to San Rafael. In addition, the 400,000 colons advanced for the most urgent needs were used by the municipality to pay for the services of members of the Administrative Board which had been in charge of water for many years.

As a result, the only possibility for improvements in these and other communities in need of assistance is to obtain financing for the FRAU. According to Cruz, steps are now being taken with the World Bank and the Inter-American Development Bank (IDB) in order to resume work that had to be halted and that can no longer be postponed.

In the Meantime

While the proper institution for handling the problem is doing everything possible to find a solution, that solution will not come immediately. Everything depends on the possibility of uncertain financing, meaning that for some time to come, things will continue as they have.

As Dr Mata emphasized, we shall have to education the people again, just as when everything was polluted and absolute precautions were necessary.

However, this literal step backwards did not have to be taken by the country. The lack of foresight and trust caused institutions "to rest on their laurels," proud of all that had been achieved and forgetting that one has to work to maintain what it cost so much to acquire.

But the problem remains, growing day by day, and those affected will realize sooner or later that it goes beyond a simple bill that must be paid. The institutions responsible will have to make a decision, independently of the financing that has not come. Otherwise, the danger lying in wait for Costa Rica draws closer and closer, threatening to overwhelm us with a tragedy which, who knows, could have been avoided.

11,464
CSO: 5000/2010

VILLA CLARA WILDLIFE PROTECTION ACTIVITIES NOTED

Havana BOHEMIA in Spanish No 41, 8 Oct 82 pp 90-92

[Article by Alfredo Nieto Dopico, Panorama of Science and Technology Section]

[Text] When one enters Santa Clara by any of its access roads, one can see that the city is in a valley and that the most prominent of the surrounding heights is the Sierra Alta de Agabama Range which occupies the area to the southeast of the provincial capital of Villa Clara.

The view which this mountainous area offers is beautiful. What is even better is to know that in this territory an infinite number of indigenous species of flora and fauna live in a natural environment, many of which are endemic to Cuba and are in danger of extinction.

Northeast of the city are the massive mountains with the Minerva dam and its surroundings and the Santa Fe hills where the Cubanacan wildlife preserve of about 20,000 hectares is located.

This project, which is of extraordinary benefit, owes its existence to the members of the wildlife protection committees set up in Villa Clara Province and its capital city which, with the support of the local government and the collaboration of specialists from scientific institutions in the province, have taken on the task of carrying out preliminary studies for the area's development.

The choice of this territory is justified because it has a wealth of interesting flora and fauna and because it consists of serpentine savannas of little agricultural use which are set aside as forest preserves, and have several reservoirs including, in addition to the Minerva, the dams of Ochoa, Agabama and Gramal.

The existence of this place gains even more importance if we taken into account that in the province natural woodlands occupy only four percent of its area.

The small group of experts and workers at Cubanacan also carry out research projects in which scientists, specialists and students of the "Martha Abreu" Central University and the Felix Varela Advanced Pedagogical Institute participate.

The young foresters who guard the area are assigned territories in which they enforce the conservation laws and make observations on the behavior of the various wild species. In fact they are valuable assistants to the specialists assigned to process the data they collect during their extensive trips.

This scientific research, carried out primarily in the serpentine masses of the Sierra Alta de Agabama mountain range, was supplemented last year by the work of a conservation group from the Biological Institute of the Cuban Academy of Science headed by Enrique del Risco, a candidate for a PhD in biology and Barbara Sanchez, Luis Montos and Carlos Chiappi.

They determined the presence of valuable mammal species among our fauna: deer, which are in abundance in the vicinity of the dams, and jutia conga, monkeys and carabali which live in the hills and dense woods.

Dozens of birds of the most varied types add color to these places and with their songs break the silence and give the visitor a pleasant feeling.

UP to now 55 species of birds, the majority of which nest in Cuba, have been identified. Among these are 18 species endemic to Cuba, or nearly so, including among others the tocororo, the sparrow hawk, the mayito, the whiteheaded ringdove, the carta Cuba, the gnome owl, the nightjar, quail, varieties of green carpenterbirds, the churroso, the javado, and the escapulario, as well as other migratory birds which visit us.

There are well defined places which are kept as nature preserves because of the high concentration of uniquely Cuban plants of great scientific interest, among which are several varieties of palmacious plants, cactus and melocactus. Among the latter, the Melocactus actinocanthus sreces are carefully protected since they are locally endemic and there are only a few specimens.

Some of the rivers with the greatest volume of flow of the central region of the island originate within the Sierra Alta de Agabama mountain range: the rivers Agabama, Sagua la Grande, Sagua la Chica, Primero, Manajanabo, Ochoa..

For the development of this area and for the protection of the flora and fauna, reforestation without dealy is considered essential and it should be based on the criteria of saving and indigenous vegetation and enriching it, especially along the banks of rivers and streams, with fruit and wood trees which will provide food and shelter for the animals.

Climatological studies are also being made and necessary rural roadways are planned to insure internal communication. A building program of small dams will soon be started.

Although it is a new institution on which the practical work began just over a year ago, Cubanacan has already produced positive results due to the selfless work done by its workers during that period under the direction of a scientific council consisting of professors and technicians who devote a part of their spare time to this activity.

The most important step is the creation of the area, of which the people of Villa Clara are well aware, and its development goes hand in hand with the knowledge being acquired by the masses, especially the youth and children, who in one way or another participate in the development of this project.

We have a Mallard duck breeding project which is in full operation, allowing us to start repopulating some preselected reservoirs with a view to incorporating them into the natural environment.

The guinea fowl has been introduced successfully and is reproducing wihtout much difficulty. For some months the adaptation of a number of European deer of the white, black and spotted varieties has been in progress, and their controlled introduction into the area is under study.

At first glance, this might seem an easy task but this is not so. Only workers who love their profession and have a high sense of responsibility are capable of dedicating themselves patiently, without regard to the hour of the day or the weather, to the care of these precious animals, plants and other elements of the environment in which they live.

The first thing we learn is the difference in the traditional handling of domestic animals, however untamed they may be, and the wild animals which never stop being wild. A bull or a colt can be broken with a lasso, by skill or by force. However, under no circumstances can these procedures be used on deer since they are so nervous that when they are attacked they may even collapse and die.

To capture some of these animals, a specially made net is used. In the best of cases a dart with tranquilizer shot from a pheumatic weapon immobilizes them for a time.

The tasks involved in introducing a species are more complex. This is a very delicate matter. Different species of animals have developed in different parts of the planet in accordance with their evolution and in accordance with the ecological characteristics which have determined the habitat of each of them.

The introduction of an exotic animal into a country is not a simple decision. On the contrary, it involves a serious responsibility since if studies are not made and the appropriate measures adopted, it can become a harmful factor in the ecological balance of a given area.

In these cases, the animal is studied not only in relation to the effects that the new environment may have on it but it is equally important to know the consequences that its presence may have on the environment.

After clarifying the climatological factors, one of the main problems is the food they eat. One must observe the plants and seeds which they eat, the existing supply and obviously, the risk to the existence of these plants which may be endangered. In this case an appraisal must be made of what is most important.

The Guinea hens were not arbitrarily released in various parts of this protected area. The necessary analysis was first made taking into account what their presence could mean to the quail which, though smaller, is a ground fowl with similar eating habits, and its value for hunting purposes is highly regarded.

The Cubanacan experts recently learned a very interesting lesson without planning to do so. It had to do with methods of observation. It was in a certain area where the vegetation was a thicket, consisting of shrubs and small trees, mostly thorny, which appeared to have little or nothing to offer to the fauna, so it was decided to cut them down to plant other trees in their place. To the great surprise of everybody, in spring they saw that the small birds preferred the small trees for nesting among the dense and thorny branches which provide protection for their chicks.

The luxuriousness of the place, and the attractions it offers the visitor in direct contact with nature, do not divert attention from what we consider the main point, which is that this place is a solid example of the activities taking place throughout the country in that beautiful task of protecting the flora and fauna.

9204
CSO: 5000/2008

PROJECT TO PROVIDE MORE WATER FOR MANAGUA

Managua EL NUEVO DIARIO in Spanish 10 Oct 82 pp 1, 7

[Text] Carlos Espinoza, deputy director of INAA [Nicaraguan Institute of Aqueducts and Canals] informed EL NUEVO DIARIO that $50 million will be invested during the fourth stage of the More Water for Managua plan which will begin at the end of 1983. The plan contemplates the construction of 37 wells on the shores of Lake Tisma, which will provide 36 million gallons of water a day.

Espinoza explained that in 1981, a World Bank loan of $3.7 million was obtained to finance the studies and the final designs for the project which will be the fourth stage of the More Water for Managua plan. The World Bank will also finance a study on the water requirements of the population projected up to the year 2000.

Master Plan

Part of this loan will pay for preliminary studies for the water distribution master plan, which will be carried out in stages, and for the preparation of the final designs and the development of the Tisma area. Espinoza pointed out that Lake Tisma was chosen to supply water for Managua because the expense would be less than if either Lake Granada, whose waters would have had to be chemically treated, or Lake Masaya, which would also involve higher expenses, had been chosen.

Espinoza said it is expected that the plan for the fourth stage of the More Water for Managua plan will be carried out promptly if all the World Bank funds arrive soon, as it is anticipated that neither Lake Asososca nor the wells dug near Managua will provide enough water in the next few years.

38 Kilometers of New Pipe

Espinoza said that since 1981 the INAA, working through the Unidad consortium, has had a total of 38 kilometers of streets and avenues dug up in Managua for the installation of new pipes to supplement those already there to improve the water pressure so that it will reach the homes in the capital without difficulty.

Espinoza also stressed that the Unidad consortium is required to restore completely the pavement which has been torn up. It should all be in good condition by the end of 1982 or the beginning of 1982 when the contract ends.

The addition of pipes in Managua is one of the projects being carried out under the third stage of the More Water for Managua Plan at a cost of $10.1 million which are being financed by the World Bank, the central government and INAA, and should be completed by June 1983.

Espinoza said that under the third stage of the plan, four wells have already been dug in various parts of Managua, and 4 million gallons of water will be obtained from them daily. An additional well is being dug which is expected to provide 2 million gallons of water daily.

Two New Tanks

He also said that under the third stage of the plan a steel tank will be constructed at kilometer 8 of the southern highway with a storage capacity of 126,000 gallons and another tank at kilometer 13 and 1/2 of the same highway, which will replace the one which is there now and which is in poor condition.

It is also contemplated that the Altamira tank's pumping capacity will be increased through modern equipment of greater pressure capacity which will allow operation without problems during the next 5 years.

In conclusion, Espinoza said that with the construction of the new wells and tanks, Lake Asososca will be able to maintain its level for an extended period of time.

9204
CSO: 5000/2009

WATER PROBLEMS VIEWED; TREATMENT CALLED INADEQUATE

Beirut AL-SAFIR in Arabic 24 Oct 82 p 6

[Director of 'Ayn al-Dulbah Water Authority: Political and Administrative Reasons for Water Crisis; Treating With Chlorine Not Sufficient To Deal with Pollution]

[Text] Nasir Nasrallah, director of the 'Ayn al-Dulbah Water Authority, has revealed that politics, special interests and pressure are the true reasons for the cronic water crisis. He did not deny the rumors about polluted drinking water, saying that the means of treatment are not enough since there are no modern purification sites except the station at al-Dayshuniyah, which is considered the most modern in the Middle East.

Nasrallah explained that the problem of water's not reaching the upper floors [in apartment buildings] is caused by residents' opening up the meters and said that a campaign to fix these meters will begin within 15 days and will last approximately 3 months.

All this came out yesterday in a comprehensive interview with Nasrallah about the water crisis in the capital and the rest of Lebanon, in which he said:

"The water policy followed from 1943 to the present is the true reason for this intractable crisis. The Ministry of [Hydroelectric] Resources is linked with two main directorates, the General Directorate for Water and Electricity and the General Directorate for Investment. Unfortunately, it appears that these directorates have turned permanently to investment, while stopping providing water and electricity completely."

He added, "Moreover, the budget of the Ministry of Resources is no more than 50 to 60 million a year, distributed among the districts for favors, influence and rewards, not according to need. Take for example what happened with us at the Dayshuniyah station, when I personally asked UNICEF to make an operational and long-term study on providing pure water from all the Authority's sources. Studies were made, money provided and requirements for the system were met. However, the system required two persons: the first began work a year ago and has not finished yet, and the second has not begun. Every day there are different excuses."

In answer to a question about the reasons for delays in using natural water sources, Nasrallah said:

"The main reason is politics, because the capital's water problem can be solved only by bringing water from the Awali River. However, some influential people in the south refuse to implement this project, demanding that the second phase of the Litani project be implemented to provide irrigation water for the south at a level of 800 meters. This project would take 10 years and would mean a delay in providing water to the capital for the same period, although water could be restored to the southerners by bringing water from al-Qir'awn Lake using the force of gravity, thus providing water to all parts of the south."

He added, " Although the politicians understand the situation, they insist on their positions merely for show."

Answering a question about drinking water pollution, Nasrallah said: "When water is purified, it is put under specific conditions, the most important being the sedimentation, purification and sterilization tanks. Because these conditions are not available in any water station except all-Dayshuniyah, I cannot say positively that the water is safe for drinking."

He added,"I cannot even guarantee the purity of al-Dayshuniyah's water, which is purfied and sterilized according to proper scientific methods, after it passes through the system. Since the facilities are not complete at the other stations, the water may be ruined."

Nasrallah was asked, "How does the Authority allow the release of impure water?"

He said, "'Ayn al-Dulbah's Water Authority depends on unsettled ground water, which is mixed with sediment from swamps and other similar places. It is sterilized by adding pure chlorine. However, in my opinion, this is not sufficient, and we are now in the process of bringing water from wells in the south, such as in al-Hazimiyah, Galerie Sam'an, al-Qartabawi and elsewhere, to the Dayshuniyah station to treat it before pumping it."

He added, "The subject of preventing pollution is in turn linked with not cutting off electricity. Unfortunately, this is the case. The water pressure inside the system is stronger than the pressure outside it. This means that swamp sediment and other leakage will not get into the water pipes unless the inside pressure, which counters the outside pressure, stops. The inside pressure will not stop unless the electricity is cut off, when the pumping stations will stop. We rely on increasing the amount of chlorine for purification, but this is not sufficient.

"The solution is in the hands of the government, and the future depends on the policy that the new regime will follow to provide water using the force of gravity, thereby reducing the cost of bringing water and providing a uninterrupted supply.

"The previous policy depended on fragmentary ways of providing water because of pressure, favors, deals, special interests and currying favor. It was a faulty policy which did not serve the citizens' interest."

About the cost of a project to provide water naturally, Nasrallah said, "Contrary to what some people believe, the cost of such a project would be no more than 700 million Lebanese pounds. If the required amount is set aside, the water crisis in Lebanon could be solved within 5 years. However, before projects and before setting aside money, some citizens must stop playing with the meters and realize that the national interest requires that they work together and forego selfishness.

9882
CSO: 5000/4503

BOTSWANA

WATER SHORTAGE THREATENS CAPITAL

Gaborone DAILY NEWS in English 5 Oct 82 p 1

[Article by Seatlholo Tumedi]

[Text] GABORONE, believed to be one of the fastest growing capital cities in Africa, is likely to experience water problems as it expands by the day.

The 34-million cubic-litre ççrone dam, originally planned to supply a maximum population of about 20 000, is presently only 42 per cent full after it received only two thirds of the normal water recharge last year.

This is coupled with an annual evaporation rate of 1.7 litres which is about four times the annual rainfall of 450 millilitres which goes into the dam.

The town, with its present population of 59 700 people, consumes some 21 000 kilolitres per day with industries using between 55 and 60 per cent of the supply.

The water situation in Gaborone causes considerable concern to the Government and the Water Utilities Corporation.

In an interview, the Chairman of the Water Utilities Corporation, who is also the Permanent Secretary in the Ministry of Water Affairs and Mineral Resouces, Mr Charles Tibone and the Chief Executive of Water Utilities, Mr Colin Sayles explained that there was a need to raise the wall of the dam by eight metres and that this would cost about P30 million.

Other projects in the pipeline include building two supplementary dams on the Kolobeng and Metsimotlhabe rivers.

According to the water officials, the projects should go as follows:

With its present size the Gaborone Dam should be able to supply the town up to 1984. After the eight metres' rise, the dam should supply the town up to 1987. After this the Kolobeng dam would help the water supply demand up to 1990 after which water from Metsemotlhabe dam would be needed.

When all the sources around Gaborone are exhausted, the water authorities might have to turn to international rivers such as the Limpopo for the town's water supply.

Despite the neat layout of plans, there is a serious lack of finance to get the projects off the ground. According to Mr Tibone and Mr Sayles, negotiations with potential sponsors including the World Bank have been held but none of the funding bodies had yet made any commitments.

The short term projects, according to Mr Sayles, include investigating ground water supply at Ramotswa. The Water Utilities Corporation also intends temporarily raising the Gaborone dam's spillway by one metre before the end of the year. Mr Sayles explained that with this improvement the dam would retain much more water and increase its yield.

The Corporation also intends to reduce evaporation losses at the dam by "a destratification method."

Mr Sayles explained that this was a process whereby the body of water in the dam's reservoir would be turned over to obtain an even temperature at all levels.

This is expected to reduce the surface water temperature thus reducing evaporation.

The Chief Executive of Water Utilities also said if we do not get a recharge of the dam this year "restrictions on water usage in the town will be necessary."

He also advised that residents of Gaborone should be aware of the need to conserve and use water carefully. "We have to use water with extra care because we live in a semi-arid area," he said.

The water situation may also affect the work which has already started at Gaborone West.

In a separate interview the Senior Planner in the Department of Town and Regional Planning, Mr Jan Wareus said insufficient water supply in Gaborone was likely to hold up on the construction of Gaborone West.

It is expected that when Gaborone West is complete the town's population will be between 128 000 and 148 000 people and that the city will consume some 40 000 kilolitres of water a day.

CSO: 5000/41

CAMEROON

BRIEFS

BIG LANDSLIDES--In mid-September this year, two big landslides occurred on the main and sole operational highway linking the North-West Provincial capital of bamenda with the West Province or in fact with the rest of the United Republic. The first occurred at Mbouda and a few days later the situation was further aggravated by an even more serious landslide at the Provincial border town of Santa some 24 km from Bamenda. Within a few days road technicians were able to find a suitable deviation for the road at Mbouda. But the problem at Santa was of such magnitude that for more than a week engineers were unable to find a solution that could ensure the constant flow of traffic to and from Bamenda. The landslide caused a large portion of the road to sink creating a huge crater more than ten metres deep and several metres wide. Eye-witness accounts from local residents said the road sank at about 9 a.m. following a brief earth tremor and a loud explosion which was heard several kilometres away. At the time of the explosion there was no rain which was heard several kilometres away. At the time of the explosion there was no rain which led to initial rumours that some explosive might have been planted in that portion of the road; such by whom and for what reason no one would say for certain. [Martin A. Nkemngu] [Excerpt] [Yaounde CAMEROON TRIBUNE in English 27 Oct 82 p 3]

CSO: 5000/40

IRON ORE MINING BRINGING 'WIDESPREAD POLLUTION' TO WATERWAYS

Monrovia DAILY OBSERVER in English 5 Nov 82 pp 4, 8

[Excerpts]

Officials at the Liberia Hydrological Services, which was established in April 1972 to identify, study and protect the nation's water resources, provided the Daily Observer with a series of reports, bringing to the attention of Government, Lamco and other mining companies the very serious problems being posed by the widespread pollution which iron ore mining was bringing to several Liberian rivers and creeks and even the Atlantic Ocean.

As early as August 1972, a report written by Dr. A.E. Nyema Jones, then Deputy Minister of Lands and Mines, and Mr. William Stewart, Director of the Liberia Hydrological Services, confirmed that the processes of ore extraction by Lamco (and other mining companies) dump millions of tons of waste materials on mountain slopes or other 'convenient' areas, from where they find ready access into nearby streams and rivers.

Red Drinking Water?

Several reports from the Ministry say that Lamco has dumped its wastes directly into natural rivers such as the St. John's, which spans not only Nimba, but Bong and Grand Bassa counties as well. This, said one report, leads to pollution, posing danger to human beings, aquatic plants and animals. A more recent report said that by the end of 1977 some 4.4 million cubic meters of waste material had been dumped into Lamco's Alpha Valley, 20 million cubic meters of waste material had been dumped into the Secca Valley and 54 million cubic meters of waste had been dumped on the south east side of Mount Nimba. According to the report, most of the waste material is washed into the St. John's and the Yaniga rivers. The Yaniga River runs on the border with the Ivory Coast, bearing the potential of an international question.

Protein Denied

Because the St. John River is completely reddened and polluted, the people who live along its banks, in Nimba, Bong and Grand Bassa, can no longer use it for drinking, for no one, including the honorable Lamco General Manager, will drink red water.

The people's chief source of protein has also been cut off, as fishing in the St. John's has been seriously hampered.

The World Health

erosion, which is partly a direct result of the Port of Buchanan, built to export Lamco's iron ore overseas.

Organization has stated that the maximum desirable level for iron in drinking water is 0.1 milligrams per liter. But tests in the St. John River show that the iron content of its water has been as high as 1.2 milligrams per liter.

The Daily Observer has carried numerous, well illustrated articles showing the systematic destruction of the city of Buchanan by

CSO: 5000/43

RAINS BRING RELIEF TO DROUGHT-STRICKEN AREAS

Johannesburg THE CITIZEN in English 3 Nov 82 pp 1, 2

[Article by Keith Abendroth]

[Text] SOAKING country wide rain has brought relief to most drought-stricken areas and farmers are confident drought conditions will be broken in the next few days.

A spokesman for the South African Agricultural Union said yesterday that apart from a few areas in the Northern Cape, indications were the widespread drought had ended.

"We spent the morning talking to farmers in many different parts of the country and almost all of them say they are wearing grins from ear to ear," he said.

Rain in the Transvaal has been general, although insufficient to refill sadly depleted dams.

Planting is now being undertaken on soil softened by steady, penetrating rains.

Welcome rains have also fallen over most of the Cape--up to 70 mm within days in some areas--and grazing is rapidly improving.

In the southern coastal region of the Cape, farmers are struggling with a different problem. Although happy with the rains, they are battling against high winds.

Farmers in Natal seemed the happiest, said the spokesman.

Indications are the province will be delightfully green within weeks--promising a good summer holiday season for inland holiday-makers as well."

In some districts of the Free State and Far Northern Transvaal farmers can now abandon expensive and time-consuming efforts to cart in water for their stock. Nearly 40 districts are still listed as grazing distress areas, but it is expected this classification will soon be changed.

In the Tzaneen area of the Transvaal Lowveld, farmers estimate drought has already caused a five to 10 percent crop loss.

In other areas of the Lowveld farmers have planted up to 60 percent lower tomatoes than usual because of water problems.

The KwaNdebele Government has spent about R20 000 a week on water for its citizens. According to a spokesman for the country's Works Department, the drought has left it short of more than four million litres of water a day.

But despite the relieving rain, the price of some dairy products may still rise.

Heavy rain in Natal over the past three days has greatly improved the water situation at all Natal Parks Board resorts.

For the first time in several months water can now be obtained around-the-clock at the St Lucia camp. The Umfolosi River is again running strongly after drying up early last month.

The situation has also improved vastly in the two areas probably worst affected by the drought--Utrecht in Northern Natal and Pongola in Zululand.

CSO: 5000/31

THREAT OF ACID RAIN DISCUSSED

Johannesburg THE STAR in English 16 Oct 82 p 7

[Text] Research on acid rain, the spreading scourge of industrialised societies, has begun in South Africa.

The chief air pollution control officer for South Africa, Mr Martin Lloyd, said the situation would not be easy to study because even thunder storms are thought to change atmospheric pollution.

Therefore, the Highveld high temperature electric storms in summer are going to be a critical factor to be examined in the analysis of acid rain, making the task even more difficult.

The rains problem was first seen over a decade ago in the Scandinavian countires. Their research pointed an accusing finger at windborne pollution from coal and oil-fired furnaces in the UK.

However, the full picture is still not understood and is shrouded in controversy, says Mr Lloyd. Britain recently asked scientists to review available data on acid rains.

Mr Lloyd said there are several factors in South Africa thought to mitigate the experiences with acid rain elsewhere: low rainfall, alkaline soil in a few areas which acts as a neutraliser, and the absence of lakeland.

It is hoped research will show what is happening in this country, whether it is storing up trouble for the future or creating headaches elsewhere, says Mr Lloyd.

Escom has been asked by the Department of Health to investigate the situation.

A single modern power station annually emits 140 000 tons of sulphur dioxide, thought to be one of the components of acid rain, but taken with output from industry as a whole is insignificant.

Clean-air fundis here regard the existing technology to control air pollution being used in Europe and America as unrelible and expensive. Its use, they argue, would add R200 million to the cost of a new power station.

Mr Lloyd says it is therefore policy to discharge sulphur dioxide from 3 000m high stacks. "We believe by diluting the sulphur dioxide into the high atmosphere and spreading it over 1 000 sq km or more it will not immediately affect soil or vegetation," he said.

"This is not the solution but it gives us time to study further promising developments in technology."

However, the controlling body of Britain's power stations, the Central Electricity Generation Board (CEGB) has been attacked for causing pollution beyond its bailiwick because of its tall stacks policy.

In South Africa, an estimated 250 000 domestic coal burning stoves, mainly in black townships, are also seen as a factor in the acid rain equation. Here better housing and a supply of electric power are the answer.

Escom says it cannot produce power without pollution, and since its projections for energy-use shows an increase it must ensure it is not a significant despoiler of the atmosphere.

Miss Margaret Bohm, a graduate in training with Escom researching acid rain, says collection and analysis of rainwater is not easy because of the limit on the quantity and contamination risk throughout.

Her own studies of the problem in Vanderbijlpark before joining Escom posed more questions than they answered, she says. One of her first tasks will be to find out what is the natural pH of rain.

"We simply don't know," she said. "Experience has shown that acid rain is not necessarily less than 5,6."

To determine this a monitoring station is to be set up in industrial smoke-free north-western Transvaal, but, even here researchers will have to guard against windborne pollution from Botswana.

Miss Bohm is at present solving the problem of automatic sampling at Escom Rosherville laboratories. "If you leave a container out in sunlight or in a lab, the pH is going to increase, invalidating results," she said.

Such are the challenges she has to overcome.

Her auto-sampler, once perfected, should not only measure pH values but read off the organic and inorganic substances found in rainwater.

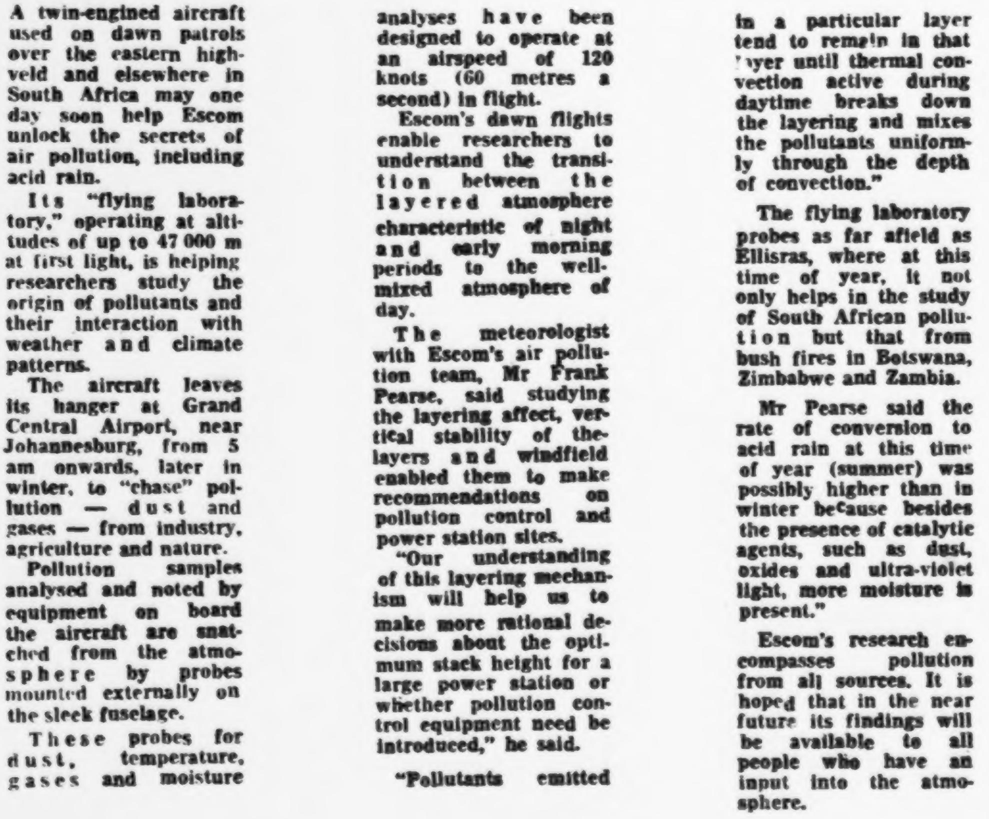
A network of samplers to study the dispersal and transport mechanisms of pollution downwind of source is expected to be in operation by the end of 1983 after trials in the Cape.

Escom is also using a converted executive aircraft packed with instrumentation to survey the atmospheric pollutants from their stations. This, said a spokesman, gave them the ability to chase aerial pollution.

Miss Bohm one day hopes the flying laboratory will help her unlock the secrets of an area beyond the point of the source of pollution where weather is "made."

However, it is in this area that South African researchers believe chemical changes determined by extremes of temperature occur in pollution in an aerosol form before it falls as acid rain.

'Flying Laboratory' Helps the Research



A twin-engined aircraft used on dawn patrols over the eastern highveld and elsewhere in South Africa may one day soon help Escom unlock the secrets of air pollution, including acid rain.

Its "flying laboratory," operating at altitudes of up to 47 000 m at first light, is helping researchers study the origin of pollutants and their interaction with weather and climate patterns.

The aircraft leaves its hanger at Grand Central Airport, near Johannesburg, from 5 am onwards, later in winter, to "chase" pollution — dust and gases — from industry, agriculture and nature.

Pollution samples analysed and noted by equipment on board the aircraft are snatched from the atmosphere by probes mounted externally on the sleek fuselage.

These probes for dust, temperature, gases and moisture analyses have been designed to operate at an airspeed of 120 knots (60 metres a second) in flight.

Escom's dawn flights enable researchers to understand the transition between the layered atmosphere characteristic of night and early morning periods to the well-mixed atmosphere of day.

The meteorologist with Escom's air pollution team, Mr Frank Pearse, said studying the layering affect, vertical stability of the layers and windfield enabled them to make recommendations on pollution control and power station sites.

"Our understanding of this layering mechanism will help us to make more rational decisions about the optimum stack height for a large power station or whether pollution control equipment need be introduced," he said.

"Pollutants emitted in a particular layer tend to remain in that layer until thermal convection active during daytime breaks down the layering and mixes the pollutants uniformly through the depth of convection."

The flying laboratory probes as far afield as Ellisras, where at this time of year, it not only helps in the study of South African pollution but that from bush fires in Botswana, Zimbabwe and Zambia.

Mr Pearse said the rate of conversion to acid rain at this time of year (summer) was possibly higher than in winter because besides the presence of catalytic agents, such as dust, oxides and ultra-violet light, more moisture is present."

Escom's research encompasses pollution from all sources. It is hoped that in the near future its findings will be available to all people who have an input into the atmosphere.

CSO: 5000/31

SOUTH AFRICA

LOW PROFILE KEPT ON THREAT OF INSECTICIDES IN MILK

Johannesburg THE CITIZEN in English 3 Nov 82 p 11

[Article by Keith Abendroth]

[Text]

THE authorities appear to be keeping a low profile on the possible threat posed by the discovery of traces of insecticide and antibiotics in certain milk and dairy products.

But it is learnt there is considerable concern at Government level, linked with determination to get to the root of the problem and eliminate it, keeping it in low key so as not to cause needless panic.

The Minister of Agriculture, Mr J J G Wentzel, first raised the subject two weeks ago when he opened the new National Co-operative Dairies complex at Heilbron.

He revealed that the appearance of antibiotics and insecticides in dairy products was giving cause for concern.

Later his own department heavily censored a report of his address when it was reported in the departmental newsletter.

Meanwhile it is learnt that the department has started a campaign to alert farmers to the danger of insecticide traces in milk in qunatities regarded as dangerous or above specified minimums.

Various tests have been done on samples by the SA Bureau of Standards and analysts of the Department of Health.

According to medical sources repeated small doses of one of the insecticides mentioned by Mr Wentzel (dieldrin) could build up in a human body to the point where later exposure to the poison in even a small dose could result in acute poisoning or even death.

In addition, according to doctors, repeated ingestion of small doses of antibiotics in milk could result in dangerous consequences through building up a resistance to antibiotics, making them ineffective if needed later as treatment.

Some antibiotics, it is claimed, could even cause blood disorders.

CSO: 5000/31

BRIEFS

CISKEI'S RAIN--THE first heavy showers of rain fell over the Ciskei and surrounding areas at the weekend bringing relief to farmers. Up to 40 mm of rain was measured in King William's Town. The nearby Maiden Dam is about 33 percent full and the steady flow of water will fill it today, a spokesman for the town's municipality said. A thanksgiving and prayer meeting for rain will be held in the town today. [Text] [Johannesburg THE CITIZEN in English 2 Nov 82 p 3]

PESTICIDE RESIDUES IN FOOD--SOUTH Africa is one of the few countries in the world where the incidence of pesticide residues in food was on the increase and causing a serious problem, the Minister of Agriculture, Mr Greyling Wentzel, said yesterday. Mr Wentzel, who made the disclosure during the opening of new dairy offices at Heilbron in the Free State yesterday, said the appearance of antibiotics and pesticide residues in milk and dairy products in particular was a cause for grave concern. He did not elaborate but announced that an intensive information and educational programme had recently been launched by the Department of Health and Welfare, in co-operation with his department, to try to combat the growing problem. Mr Wentzel appealed for the co-operation of dairy farmers and expressed the hope that the Government would not have to resort to "its considerable legislative powers". "In view of the dangers which the presence of antibiotics and pesticide residues in dairy products present to the entire population, the Department of Health and Welfare and the Department of Agriculture request the co-operation of all farmers to prevent the pollution of edible products on their property," Mr Wentzel said. He said this could be achieved by: --Not using prohibited poisons. --Adhering to instructions and correct withdrawal periods when administering antibiotics; and, --Adhering strictly to instructions and the recommended methods of application of pesticides. This was preferable to destroying milk and other food products polluted by prohibited substances or containing poisons above the approved levels, he added. Mr Wentzel said the public was aware that it was protected by legislation against food contaminated with antibiotics or residues of pesticides and relied on food producers to adhere to the regulations. The food producer could suffer economic setbacks if he lost the consumer's confidence and it was his responsibility to ensure that his product was safe, the Minister said. [Text] [Johannesburg RAND DAILY MAIL in English 21 Oct 82 p 2]

ZULULAND WATER RESTRICTIONS--Severe water restrictions have been reimposed in the Kwa-Mbonambi district, Zululand, despite a heavy rainfall last month. This had been necessary because the level in the local dam supplying the town had dropped drastically as a result of the scorching heat of the past few days. Virtually all SWA water storage dams would run dry by the middle of next year unless the coming rain season produced a considerable run-off in the catchment areas, the secretary of the Department of Water Affairs, Mr J Jordaan, said in an annual report. Rainfall over large areas of the territory had shown a steady decline since 1976 and dropped to its lowest point in the last rainy season. The water supply scheme for the Albany Coast Water Board which will supply the municipalities of Bushman's River Mouth and Kenton-on-Sea was opened yesterday by Mr J.W.E. Wiley, Deputy Minister of Environment and Fisheries. "Having now obtained an assured water supply, a system to distribute the water is but the beginning," Mr Wiley said. "The important thing is now to utilise these facilities to maximum benefit and to ensure that your underground water resources are adequately protected." In Natal, the cost of water over the past three months had gone up by 62 percent in Pietermaritzburg and 40 percent in Durban, Mr Roger Whiteley (NRP Durban Point) told the Natal Provincial Council yesterday--Citizen Reporter and Sapa [Text] [Johannesburg THE CITIZEN in English 18 Nov 82 p 11]

CSO: 5000/42

WORKERS' EXPOSURE TO TOXIC SUBSTANCES REPORTED

Harare THE SUNDAY MAIL in English 17 Oct 82 pp 1, 2

[Excerpt] **HUNDREDS of workers are being poisoned each year because they are being exposed to carcinogens and other toxic substances at work, the director of the Ministry of Labour and Social Services' Occupational Health, Safety and Compensation Department declared last week.**

And, because of a lack of trained inspectors and the country's relatively sophisticated industrial infrastructure, the picture will not improve significantly soon, said Cde Rabelan Baloyi.

He told The Sunday Mail that ageing industrial equipment that causes pollution, and worker and management ignorance about job safety have resulted in more employees becoming victims of silicosis, asbestosis, lead poisoning, tuberculosis, fibrosis, leukaemia or cancer. Others were becoming deaf or hard of hearing.

Cde Baloyi said those who fail to wear protective clothing when they handle sulphuric or hydrochloric acids, chromium compounds, or engage in sand blasting are likely to suffer severe lung and other respiratory ailments.

"I know a number of chemicals that we handle in industry that can cause long-term problems," he said. "It is true that there is a correlation between exposure to such chemicals and disease.

"But much still remains to be done in terms of looking for the specific causes. Sometimes these diseases occur long after the person is no longer working. Many of these diseases are respiratory.

"We need a study that would look at those who retire and then become ill, because in some cases people have no idea how they got the disease and often cannot even relate it to the workplace."

He said the Ministry of Labour and Social Services was considering rule changes that would require private sector employers to carry out pre-employment medical tests on job applicants. Employers would also be expected to conduct frequent medical checks on their employees to uncover job-related diseases.

"Right now it is very difficult to know how serious the problem is because we do not have all the data we need. We have approximately 100 reported asbestosis cases and also several cases of industrial dermatoses.

"But these diseases take a long time to manifest themselves," Cde Baloyi said. "The trend with diseases such as asbestosis or cotton dust takes 10 to 20 years, or an average of 15 years, to be seen.

"Our overall problem though, is that there is no mechanism right now to show the origin of cancer, whether the cause is environmental or otherwise. Much still needs to be done in terms of looking for causes."

But steps are being taken. The Ministry of Labour and Social Services has acquired machinery that enables it to gather and monitor dust samples, gases and fumes in factories.

And because the country has a rather well-developed and diversified industrial base that means Zimbabwean workers come into contact with more hazardous chemicals than is the case in less-developed countries.

An additional problem is a lack of trained personnel to visit factories and advise employers and their managers on what steps to take to promote worker safety.

"We have an ignorant workforce in terms of knowing the hazards of exposure to toxic substances. We don't have exposure limits."

To attempt to reduce worker and management ignorance about toxic materials, Cde Baloyi said his agency has embarked on a preventative programme. This includes educating workers and employers about health and safety programmes by organising seminars, teach-ins, lectures and showing films.

"We want workers to realise that if they are not careful on the job they not only risk their paycheques but also their lives. So far the response has been fantastic. We are training about 1 000 people a month throughout the country on proper safety methods.

CSO: 5000/32

BRIEFS

CATTLE KILLED--BULAWAYO--OVER-GRAZING by peasant farmers in Matabeleland has laid bare more than 172 000 ha of land bought for resettlement and all communal areas and commercial farms bordering on them, but this has not stopped 50 000 cattle dying this winter so far, Government ministers said here last night. Cde Enos Chikowore of the Ministry of Local Government and Town Planning and Cde Moven Mahachi, the Minister of Lands, Resettlement and Rural Development and the Minister of Agriculture, Senator Denis Norman, were members of a team which has been touring parts of Matabeleland to assess damage left by hungry communal cattle this winter. Cde Chikowore and Cde Mahachi and several officials were in Gwanda yesterday, where discussions on the problems continued, ending with a visit to Hollins Block where the party was shown more evidence of the ravages of wandering communal stock. The 14 000 ha farm has been bought for resettlement, but in about two months cattle have overrun it, some coming from as far as 30 km away, the ministers were told. "No government can allow the land to be destroyed by over-grazing it to this point," Cde Chikowore said. The following are some of the facts that have come to light following the ministerial investigation: --Only 3 percent of communal cattle were sold this winter, against 25 percent from the commercial sector; --50 000 communal cattle have died because of the drought, with another 10 000 or more expected to die during the next three weeks; --The average stocking rate of each district in Matabeleland was about five times more than the land could carry; and --Only 15 to 20 percent of the rural population owned the greatest number of cattle. [Text] [Harare THE HERALD in English 22 Oct 82 p 1]

RAINS AT LAST--BULAWAYO--Heavy rains have fallen over most parts of Matabeleland with West Nicholson recording the highest 24-hour fall of 60 mm. A spokesman for the Meteorological Office in Bulawayo said that in the 24 hours up to 8 am yesterday, heavy rains had fallen in the south-western parts of Matabeleland from Victoria Falls down to West Nicholson. Bulawayo had recorded 49,5 mm. [Text] [Harare THE HERALD in English 19 Oct 82 p 1]

DROUGHT-STARVED CATTLE--GWERU--THE cold snap that came on Thursday will almost certainly cause widespread deaths among the drought-starved cattle in the Midlands, particularly in the communal areas, says the provincial officer of Agritex, Mr Bob Vaughan-Evans. "Deaths have already occurred and now these are expected to accelerate dramatically," he said on Friday. "I saw some awfully thin mombes on commercial farms in the Kwekwe area the other day--and that was in good conditions compared to the communal areas." Mr Vaughan-Evans said plummeting temperatures and a lack of grazing came as a shock which the lean cattle could not take. What new grazing there was would cause them to purge badly. When this combined with cold weather and with trying to drop a calf then the cow was challenged beyond its capabilities. Mr Vaughan-Evans said the good rains that had fallen in the Midlands for nearly two weeks had brought a run-off in some of the dams. This would help, "but it will take quite a long time before they have any meaningful effect on the grazing". Communal area grazing, unlike gardens and lawns in the urban areas, did not just shoot up with the rains, for it was in such a depleted state. [Text] [Harare THE SUNDAY MAIL in English 24 Oct 82 p 1]

CSO: 5000/32

NEED FOR ECOLOGY SPECIALISTS STRESSED

Moscow MOSKOVSKAYA PRAVDA in Russian 17 Oct 82 p 2

[Article by E. Timofeyeva: "Who Will Be An Ecologist?"]

> [Text] We continue the discussion of training specialists for environmental protection.

If you open any thick magazine or newspaper, or look at the book store shelves, you will be convinced once again how much is being written today about environmental protection, monitoring pollution, waste-technology and methods of purification.

There is no shortage of environmental protection recommendations. The question is who should introduce them? In other words, who in industry is obliged by obligation to "represent the interest of nature," and to be involved in purifying industrial effluent, discharges of gas into the atmosphere and so forth.

Our newspaper has already approached the problem of training applied ecologists in a higher school. Many specializations have appeared in recent years, which take into consideration to a certain measure the questions of environmental protection. But this is only a half step to the assigned goal.

Who is training the ecologist? The viewpoint dominates that the technical VUZ with its intensive educational program should not introduce new disciplines, and the course of environmental protection at best should be facultative, light, that is to say, for general development. The universities and biological departments of the VUZ's are obliged to train applied ecologists. But the biological department of the Moscow State University does not yet have an environmental protection section. If it did, the problem would still remain unresolved. The graduates of the university mainly go to science, and industry primarily needs these specialties.

Groups are being set up at the plants in the section of the chief technologist or the chief power engineer who sometimes are also called: "for environmental protection." The enthusiastic engineers in them are involved in monitoring the work of the treatment structures, introduction of foreign ideas and penetration of in-house original solutions. They have to reach all of this with their own mind, possibly, duplicating in some case what is already known. They do not have general ecological training. This results in inevitable costs.

Some VUZ's are trying to reduce the gap between the demand for applied ecologists and the supply, having created specialized departments for ecology. But there is still no well-proportioned, accurate, well thought-out system of training applied ecologists. The impression is created that each VUZ because of its understanding of the importance of the problem as well as the "penetrative" creative and other potentialities of the teachers build its own system of ecological "image base." At times they know what is being done in other educational institutions by hearsay.

Raising these questions in previous reports, the newspaper has noted that their solution primarily depends on the interested attitude of the sector ministries to the enterprises of the USSR Ministry of Higher and Specialized Education. An analysis is needed of the accumulated experience, precise system of training of specialists in such an important area as ecology.

Can applied ecologists be trained in technical VUZ's? The Moscow Lumber Engineering Institute (MLTI) attempted to answer this question. It developed a plan for continuous ecological training of students. They began studies with the new educational year. Foreseeing objections that this VUZ has started to teach ecology, I will say directly that the MLTI is strictly a technical institute, and only one department has a "biological slant", the department of forestry management. It is precisely the efforts of its colleagues in the VUZ which has resulted in practical implementation of the idea of mandatory ecological training of future engineers-technologists, economists, programmers who are faced with working in industries which are very difficult from the viewpoint of environmental protection, wood processing, paper and pulp, and sawmill.

The authors of the plan for continuous ecological training are professor A. I. Vorontsov and associate professor G. G. Martynov who did enormous work. They succeeded in introducing precise environmental protection aspects into each course taken by the students, even those who seem to be far from the problems of environmental protection of classic general educational subjects (heat engineering, physics), as well as special, taxation, automation of production, technology of wood working and so forth. These innovations are not perceived as something foreign. Ecological questions have not been introduced into them mechanically, but based on internal logic of the subject itself.

Say that the course "Economics of Industry" is given at the engineering-economic department. Now the topic "Determination of the Damage from Environmental Pollution in the Wood-Processing Industry" has been introduced into it. Here is another example. We are already concerned with the future production engineers, they are studying the technology of glue materials and slabs, and environmental aspects of its discipline is monitoring and control of industrial emissions of gas, dust, as well as harmful substances in the slab materials.

An excellent illustration of the ecological approach to strictly technical problems can be work conducted in the department of electronics and calculation equipment by associate professor B. Ye. Glasov. The very name of the study "Methods of Modeling and Use of a Computer to Create Forest Complexes" says little to the nonspecialist. At the same time we are concerned with things which are not indifferent for many of us--organization of completely new forms of management in which the forest is used not only as an object of consumption, but also as ecological, constantly renewing system which requires protection, wise operation and care. It is precisely for this purpose that the scientists, mathematicians and physicists are attempting to model all the processes occurring in the forest, from accumulation of wood biomass, influence of solar energy on its growth to change in the leaves under the influence of gas content of the air. Only then can one predict the future of the forest, and this means, to predict and to prevent undesirable consequences.

Similar studies confirm once more the truth that ecological competence is necessary even for such people as electronic engineers if they are going to do their bit to solve biological tasks. As for the actual "natural" department in the MLTI, forestry management, here ecological training is given from the very first course. The department is the only one in the VUZ at which the 18-hour course "environmental protection" is among the mandatory.

It is no accident that the then quite new specialization, forest protection was introduced almost 10 years ago in the MLTI. In the narrow sense, these are biological, chemical and other forms of protection of the forest from diseases and death. But we well attempt to examine it more widely, as a single wide form of contact of man and nature which he is obliged to protect, and not to exhaust. Then it becomes obvious that operation of the forest, timely cutting for care and preservation of seedlings, all of this is not only and not so much technical problems as economic and ecological.

This is well understood at the department, from the dean, professor O. A. Kharin to the first class student who still has to pass 5 long years of studying and practice. By the way, practice at the department is mandatory work either in an educational forestry farm, or in a preserve, botanical gardens or forest park. Many student scientific experiments begin here. The students perform them generally on economic contracts concluded between the departments and industry. It is another matter that the further fate of this work, like some diploma projects is not always formed as the people involved would like. The MLTI transfers them for practical use to the forestry farms, preserves, the station of forest protection where they often then gather dust on the shelves.

This is yet another proof that the service of environmental protection in the forest farms, and at the enterprises must be done by specialist in the field of applied ecology. The graduates of the higher school do not yet have this recording in their diplomas. It should be.

9035
CSO: 5000/17

BRIEFS

LIMASSOL EROSION-PREVENTING MEASURES--We are informed that between Epikhosis and Enaerio (opposite GSO /expansion unknown/ and the Public Park) the first two jetties will be built on the basis of plans by an English expert to protect Limassol's shore from erosion. The Ministerial Council reached its decision on the construction of the two submerged jetties at its recent meeting (last Friday). As is known, the problem of Limassol shore erosion is an old one and has become worse the past 10 years following the Turkish invasion. Vertical jetties were constructed in the sea in the area of the hotel beaches which they protect but leave the rest of the shore exposed to erosion. Because of this fact and the repeated protests by the public and nature lovers, the government hired the British expert who has prepared a study for preventing the entire shore from eroding. The two jetties will be parallel and 80 meters from the shore and from each other. They will be submerged (will not be seen above the water's surface) allowing the water to move and be "aerated" in contrast with the present vertical ones where the water between them remains stagnant. /Excerpt/ /Nicosia KHARAVGI in Greek 3 Nov 82 p 1/ 7520

CSO: 5000/4706

NEW ENVIRONMENT MINISTER CHRISTENSEN GIVES VIEWS

Copenhagen INFORMATION in Danish 3 Oct 82 p 6

[Article by Stig Albinus]

> [Text] Chr. Christensen says that nature is a gift from God which has to be protected. In this article, he discusses nuclear power, sulphur, bird life, illegal building constructions, and Christiania.

The nonsocialist government's environment minister, Chr. Christensen of the Christian People's Party, will adhere to a "green line" in the environmental policy at the same time as he will work for the introduction of nuclear power in Denmark once the problems of the safety of reactors have been solved. Nuclear power may contribute to increasing the protection of nature and the environment because nuclear power limits the amount of pollution from energy consumption, Chr. Christensen says.

Here, the environment minister gives his views on the environmental policy and his tasks as environment minister.

It is no accident that Chr. Christensen has become environment minister. "Already in the past,when Paul Hartling attempted to change his narrow government into a four-leaf-clover government, did the Christian People's Party express its desire to get the post of environment minister."

A Gift From God

To the Christian People's Party, the interest in nature and the environment is a matter of primary importance. "We consider the nature that we have been given a gift from God. Nature is a gift which we have been given to administer in the right way. It must not be destroyed by pollution. This applies whether it is a question of the harmful smoke from chimneys, the poisonous discharges into lakes, streams, and the sea, or the problems of removing the chemicals which factories cannot themselves get rid of," Chr. Christensen says.

Chr. Christensen finds that the introduction of nuclear power will be a good thing because it will cause a reduction in the present rate of pollution from oil and coal.

"If nuclear reactors were safe, nuclear power is a cleaner and more pro-environmental source of energy than oil and coal. The burning of oil and coal today gives an enormous amount of pollution. If the problem of the safety of nuclear power becomes solved, we shall work for the introduction of nuclear power, but, in that case, the question will, of course, have to be decided in a referendum. However, it is clear that we take a positive view of nuclear power," Chr. Christensen says.

Safe About Barseback?

[Question] Do you feel safe about the location of Barseback?

[Answer] If they had known as much about nuclear power when deciding upon the location of Barseback as we do now, they would not have located it where it is now. There is no doubt about that. But now it is there.

One of my first tasks has been to compose the committee of three Danes who, together with three Swedes and one Norwegian as chairman, will be evaluating the risks of Barseback. Now they have to come up with a report on Barseback. They have got the period till November of 1983 to work in, and, till then, I shall not take a position on Barseback.

Sulphur Pollution

[Question] The sulphurous flue gas from chimneys pollutes the urban environment and causes an acidification of lakes. This gives in particular problems in Sweden where the soil, unlike the soil in Denmark, is not calcareous. Will you demand flue gas desulphurization?

[Answer] We have to pay great attention to the development which is taking place at present when, for commercial reasons, we have to utilize oil and coal. The burning of oil and coal results in an enormously high rate of pollution, as far as the amount of sulphur is concerned. The result of this is that lakes become acidified so that the vegetation and fish stocks become threatened, and it makes it difficult for trees to survive. Also urban areas are troubled by sulphurous fumes.

[Question] It is possible to install flue gas desulphurization equipment in chimneys. Will you be working for the introduction of such measures?

[Answer] I am very much aware that it is possible to install equipment which will prevent sulphur pollution, but it cannot be done without costing money.

[Question] Will you promise that you will be doing something to alleviate the problem of sulphur pollution?

[Answer] I can guarantee you that I will take the problem in hand. But I cannot say anything definite about what I will do. A so-called anti-acidification committee has been set up to work on the problem. I first want the recommendations of that committee.

Projecting Dike

[Question] Last year your predecessor, Erik Holst, was about to present a proposal to the effect that salt water be pumped into the area behind the projecting dike in North Schleswig seeing that the basis of existence for 100,000 birds has disappeared together with the salt water. Is this a matter which you intend to follow up?

[Answer] The fact that they made the projecting dike constituted a very serious interference in nature. Ornithologists in Denmark and Europe are very much interested in the matter and have pointed to the fact that the birds disappear when the salt water is pulled out. The ideas which have been presented of conveying the water into the area by way of some kind of irrigation system are very interesting. However, the security which has been created for the population thanks to the dike should not be jeopardized at the same time. The county of North Schleswig and the municipality of Højer have clearly rejected the idea of pumping salt water into the area. At the same time, there is disagreement on the number of birds threatened in the area on account of the dike.

The last time the proposal was dealt with, it was, moreover, a condition that the EC would promise to grant economic aid for the project. We did not get such promise. We shall now find out what the EC says, and we shall then have to contact the municipality and the county concerned.

Illegal Building Constructions

[Qeustion] Will you as minister tolerate that the municipalities without penalty of the law permit illegal construction to take place?

[Answer] We are of the opinion that the two cases from Krik Cove and the Holte Center reflect a problem which it is difficult for us to live with. We have announced a bill under the group of 'possible' bills in the government's collection of bills to be presented in the Folketing. An investigation is being made, but we cannot yet say what the outcome will be.

[Question] Under the building construction legislation, only builders shall be liable to prosecution--not the approving authorities, municipalities and counties. Will you extend the liability to prosecution to include the supervising authorities?

[Answer] I cannot say anything on that yet.

[Question] There was also the possibility that the individual ministries would be checking that the municipalities and counties fulfill their duties of supervision?

[Answer] Well.

[Question] Which, on the other hand, might conflict with the autonomy of the municipalities?

[Answer] Exactly. But the matter is too serious to be left alone.

Cheminova

[Question] Is it reasonable for an enterprise such as Cheminova to be allowed to cause such an enormous amount of pollution with vast stores of poison without liability under the law?

[Answer] It is extremely important that the things which have happened in the case of Cheminova will not happen again with terrible effects in 10-15 years. The local chief constable has established that there is no legal basis for prosecution. Within this ministry, we are now working on the matter, and the Junior Counsel to the Prosecution is looking into the matter to see what can be done about it.

The problem is how to distribute the responsibility. A decision will shortly be made how to place the liability for the many millions of kroner which the damage caused by the pollution will cost. The outcome may be that part of the liability will be placed with Cheminova, part with the county and part with the state.

[Question] Have you considered extending the period of limitation in respect of environmental claims?

[Answer] We have not discussed the matter in detail. But, on the face of it, one wonders whether the 2 years are adequate.

[Question] That is to say that the period of limitation may be extended?

[Answer] No, you may not conclude that.

Citizens' Democracy

[Question] The new minister of the interior, Britta Schall Holberg (Liberal Party), stated recently that too much planning is taking place on the local level. Do you agree with her?

[Answer] I have discussed the matter with the minister of the interior. Both the minister of the interior and I agree to pay attention to the fact that provisions have been carried through under the municipal planning legislation which appear unreasonably restrictive. But, at the same time, we agree that the areas which belong under our different spheres will be safeguarded by the ministry concerned. (Municipal planning belongs under the Ministry of the Interior; editors).

[Question] Do you intend to limit the number of local plans, for example by relaxing the provisions governing the local planning obligations under the municipal planning legislation?

[Answer] We have just had a discussion with the National Union of Municipalities on the issue, and we have agreed to look further into it. There are many examples of unreasonable local plans. For example, where a local plan is made because a bicycle path is being constructed where a road already exists.

[Question] Municipal politicans often express the desire for a change of the rules and regulations governing submission of matters to citizens, so that the possibility of submission becomes limited. Will you grant that wish?

[Answer] How long does it take applying democratic rules? There is no desire within this ministry to limit the influence of citizens. It is not a waste of time to involve citizens in the total course of the planning operation. It is my impression that the time initially involved in hearing the opinions of citizens on local or municipal plans is often made up for at a later point of time.

Involving citizens from the start often gives municipal boards an entirely different basis in their work. That is why the existing rules and regulations are quite beneficial to the municipalities. Citizens are given the possibility of becoming more involved in the municipal policy work. From a democratic point of view, this is certainly worth striving for.

Christiania

[Question] Is Christiania going to be vacated?

[Answer] We have never been able to accept the fact that people are living under such poor housing and sanitary conditions. There are also problems in Christiania in connection with narcotics abuse and the closed society, as far as children and young people are concerned. A modern society cannot allow these people to become socially destroyed. That was the background against which, together with other parties, we decided, in the past, that Christiania had to be closed down.

However, against our wish, the matter has now been thoroughly discussed back and forth in the Folketing, and the report of my predecessor has been adopted. Holst's report means that Christiania will be retained, and his report has been adopted by the same Folketing in which we now sit. We are obliged to respect that.

[Question] The way the Folketing is composed now, you will not take steps to liquidate Christiania?

Normalization

[Answer] Holst's report means that Christiania will be normalized, so that it becomes part of the general society. The laws applying to the society will also have to apply to Christiania. It is also an established fact that, as in all other parts of the country, the authorities will have to combat crime in Christiania and supervise the area. At the same time, buildings and installations will have to comply with the legal codes. We can take no further steps until we see how this normalization will proceed.

[Question] Politicians from the municipality of Copenhagen have pointed out that the said normalization has not been initiated?

[Answer] The reason is that they have not set up the committee which will be working on the matter and which will comprise representatives from different ministries and the organizations concerned. And that committee has not yet been set up because the question has not yet been clarified under which ministry Christiania belongs. The Ministry of the Environment is out of the picture, and we are now awaiting a move from the Ministry of Defense, which owns the area.

[Question] What will you do if the normalization aimed at in the report by Holst is not carried through? Will a new situation then exist?

[Answer] Indeed. That is absolutely certain.

[Question] If it turns out to be impossible to carry through a normalization of Christiania, will the previous report no longer apply?

[Answer] I shall merely conclude that a new situation then exists. But we are very anxious to learn what the reaction of the Ministry of Defense will be, Minister for the Environment Chr. Christensen concludes by saying.

7262
CSO: 5000/2514

PAPER: ENVIRONMENTALISTS SHOULD REALIZE ECONOMIC LIMITS

Copenhagen BERLINGSKE TIDENDE in Danish 1 Nov 82 p 8

[Editorial: "Environment in New Light"]

[Text] Denmark has got what is described as the world's best environmental legislation. If, in the opinion of some people, Denmark is so far ahead of other countries, it is due to the fact that the legislation gives far greater possibilities for environmentalists in Denmark than in other countries of protecting and safeguarding, of making demands and of demanding intervention. And nobody can claim that this legislation is not being utilized. Every single day, environmental issues are on the agenda everywhere in the society. Ten years ago, Jens Otto Krag appointed the first minister to head the anti-pollution efforts, and, since then, every government has had an environment minister, from whose department government officials seek to support and control the environmental development in all of its facets. The environmental policy encompasses a number of ministries and has become an important and demanding task to a government. The continued environmental debate is comprehensive and comprises major as well as minor issues. The new environment minister has already promised in the Folketing to seek to persuade his Italian colleague to give up plans for Italy to dump substances polluted with dioxine into the Atlantic. And, domestically, he has got more than enough on his hands.

Nobody will deny that working for the environment is a big and necessary task, nor that it is a task ranging from the physical planning of sociological developments to the problems associated with the daily life of the individual at his place of work as well as in his home. However, it is equally undeniable that much hysterics is connected with the environmental problems, and that a number of so-called environmental groups, which actively wish to fight for improvements, take advantage of the general positive attitude toward environmental protection to carry on campaigns the goals of which are actually of a political nature.

The environmental legislation is largely a legislation authorizing ministers to make decisions. It, therefore, is easy for pressure groups to make demands which affect the decisions to be made. It is a legislation and an administration developed in times of prosperity when everybody felt that there was money for everything. Therefore, big demands were made of the public sector--and thus also of the tax-payers--and big demands were made of the trades and industries. Many enterprises have been involved in unreasonably heavy economic burdens to live up to the environmental regulations. Under the present trade conditions, there is no doubt that the environmental requirements have made it even more difficult for a number of enterprises to keep their costs at a level enabling them to compete with the products of other countries.

It is a good thing for environmental movements and also less active sections of the population to follow the developments controlled by the government and the Folketing. However, it is the duty of the new government in this interplay to convince the public that there are narrow limits to what the country can bear economically. The environmental demands may be so big that complying with them may be more harmful than beneficial. A society that is growing increasingly poorer cannot arrange matters as if it were a paradise.

7262
CSO: 5000/2515

ENVIRONMENT AGENCY STRESSES 'ACID RAIN' HARM IN ANNUAL REPORT

Copenhagen AKTUELT in Danish 28 Oct 82 p 18

[Text] Waste water containing sugar appears to be of major significance in the development of wound diseases in fish.

Off Nykøbing Falster and, to a smaller extent, in the waters off Assens, the bacteria grow rapidly when, during the sugar beet season, waste water containing sugar is discharged into the sea.

Researchers of the Environmental Protection Agency and the Royal Veterinary and Agricultural High School of Denmark have ascertained that there is a connection between the discharges of waste water containing sugar into the sea and wound diseases.

Wound diseases have thus been ascertained in 10-40 percent of the fish caught off Køge, Nykøbing Falster, and Assens. In all three places, waste water is discharged into the sea. Off Hundested, where the sea is relatively pure, wound diseases occur in only 1 percent of the fish.

From the annual report of the Environmental Protection Agency, which has just been published, it appears, however, that it is not a too simple matter to pinpoint the actual causes of the different wound diseases. Forty percent of the cod caught off Assens and 15 percent of the cod caught off Køge thus suffer from a certain cod disease although 50 percent less waste water is discharged into the sea off Assens than in Køge Bay.

The annual report also deals with fresh water pollution. The Fresh Water Laboratory of the Environmental Protection Agency has thus demonstrated an increasing rate of pollution in a number of lakes in two fairly small Jutland areas--one in Mid-Jutland south-west of Silkeborg, the other one in Thy south-west of Hanstholm. The acidification is due to the increasingly heavier acid rain of which Denmark is a net exporter and which is especially due to the burning of sulphurous coal and oil.

This form of pollution otherwise especially hits Swedish and Norwegian lakes, which, unlike most Danish lakes, do not have a chemical composition making them resistant to acidification. But in two Jutland areas, most of the life in the lakes is thus slowly dying out.

The authorities are in the process of finding out how to reduce Denmark's contribution to sulphur pollution. Together with the Ministry of the Environment, the Environmental Protection Agency will next year spend 2-3 million Danish kroner on these studies.

7262
CSO: 5000/2515

STUDY ESTIMATES COST OF KEEPING GROUND WATER SAFE FOR USE

Copenhagen BERLINGSKE TIDENDE in Danish 5 Nov 82 p 3

[Article by Kenneth Bo Jørgensen]

[Text] A total of 400 million kroner will be spent over the next 10 years to ensure that ground water, lakes and streams are not polluted by the chemical waste in the country's dumps.

This estimate was made by the Environmental Protection Agency on the basis of a nation-wide study comprising analyses by the various counties and the metropolitan area of 3,115 dumps which were in use between 1945 and 1976.

The study shows clearly that waste, containing chemicals, was discharged into 501 dumps. The result is that 19 dumps are now directly dangerous. However, these dumps are already well-known to the Environmental Protection Agency and are under supervision. Ninety-five other dumps are described as a definite threat to ground water, lakes and streams, and 226 dumps should, according to the Environmental Protection Agency, be examined thoroughly as soon as possible.

"At present, nobody runs the risk of poisoning by drinking water. But unless something is done very soon, there will be a risk," says Deputy Director of the Environmental Protection Agency M. Bundgaard-Nielsen.

"Especially in Denmark it is important to tackle the problem. We have a very high ground water quality, but, on the other hand, it is the only place from which we can get our drinking water as we have no big streams unlike other countries," says Kurt Overgaard, Master of Science, who is also from the Environmental Protection Agency, and he goes on to say:

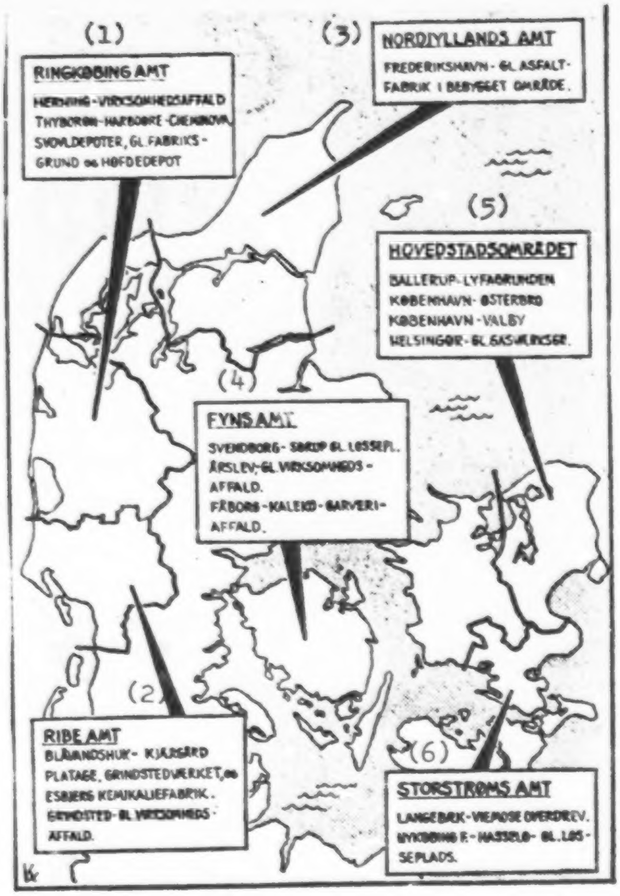
"If nothing is done now, we may risk later on having to spend 7-10 times as much on purifying the ground water, and it will after all never be possible to do it entirely effectively."

The Environmental Protection Agency will recommend to the environment minister that the costs be paid by the public sector. In the first instance.

"Otherwise, we would have to wait for a culprit, if any, to be found and held liable. That will take too long. Later on, we may bring suits against individuals in the courts to develop legel principles how to proceed against the culprits," says Deputy Director M. Bundgaard Nielsen.

The Environmental Protection Agency recommends that the costs be shared so that the counties pay 25 percent for further studies and planning of the necessary projects. The state will pay 50 percent for the very proventive measures, and the municipalities will be liable for the remaining 25 percent.

[See map and key on following page]


(1)
RINGKØBING AMT
HERNING-VIRKSOMHEDSAFFALD
THYBORØN-HARBOØRE-CHEMINOVA,
SVOVLDEPOTER, GL. FABRIKS-
GRUND OG HØFDEDEPOT
(3)
NORDJYLLANDS AMT
FREDERIKSHAVN - GL. ASFALT-
FABRIK I BEBYGGET OMRÅDE.
(5)
HOVEDSTADSOMRÅDET
BALLERUP-LYFABRUNDEN
KØBENHAVN-ØSTERBRO
KØBENHAVN-VALBY
HELSINGØR-GL. GASVÆRKSGR.
(4)
FYNS AMT
SVENDBORG-SØRUP GL. LOSSEPL.
ÅRSLEV; GL. VIRKSOMHEDS-
AFFALD.
FÅBORG-KALEKO-GARVERI-
AFFALD.
(2)
RIBE AMT
BLÅVANDSHUK-KJÆRGÅRD
PLATAGE, GRINDSTEDVÆRKET, OG
ESBJERG KEMIKALIEFABRIK.
GRINDSTED-GL. VIRKSOMHEDS-
AFFALD.
(6)
STORSTRØMS AMT
LANGEBÆK-VIEMOSE OVERDREV.
NYKØBING F.-HASSELØ-GL. LOSSEPLADS.

Here Are Denmark's 19 Most Dangerous Dumps

Key:

1. Ringkøbing County. Herning: Industrial Waste. Thyborøn-Harboøre: Cheminova, Sulphur Depots, Old Factory Sites, and Breakwater Depot.
2. North Jutland County. Frederikshavn: Old Asphalt Factory in Built-up Area.
3. Ribe County. Blåvandshuk-Kjærgård Plantation, Grindsted Power Station, and Esbjerg Chemical Works. Grindsted: Old Industrial Waste.
4. Funen County. Svendborg-Sørup: Old Dump. Årslev: Old Industrial Waste. Fåborg-Kaleko: Waste from Tanning Industry.
5. Metropolitan Area. Ballerup: Lyfa Site. Copenhagen-Østerbro. Copenhagen-Valby. Elsinore: Old Glassworks Site.
6. Storstrøms County. Langebæk-Viemose Common. Nykøbing Falster-Hasselø: Old Dump.

7262
CSO: 5000/2515

TOUGH ENVIRONMENTAL MEASURES DEMANDED FOR ANKARA

Istanbul CUMHURIYET in Turkish 27 Oct 82 pp 1, 9

[Text] Ankara (CUMHURIYET BUREAU) -- Refet Erim, Prime Ministry undersecretary for the environment, said that the state was dedicated to the prevention of air pollution. "The citizen in Ankara will have to forego other necessities to find the money for high-quality oil and coal stoves," he said.

The Prime Ministry Undersecretariat for the Environment is coordinating Ankara's air pollution prevention program. Undersecretary Refet Erim asserted that all measures had been taken to supply Ankara with 175,000 tons of coking coal for the winter of 1983, adding:

"To date, 70,000-75,000 tons of coking coal have been brought to Ankara. Procurement and distribution of high-quality coal are ongoing and 40,000-45,000 tons of the coal are being sold to Ankara residents, while around 30,000-35,000 tons are now in storage. We find that sales have reached 1,000 tons a day."

Refet Erim said that citizens would not have the difficulty in obtaining coal that they have in previous years and added, "The citizen puts off buying coal because of economic constraints, but it would be better for his own sake to buy coal on time. If Ankara residents wait until winter to buy coal after it starts to snow, they will have to buy damp coal. That is, they will be paying for water and, at the same time, this coal does not burn well and causes air pollution. We would ask, for this reason, that the citizen forego other necessities and find the money for high-quality fuel and coal."

Erim then explained that Ankara was divided into zones and that zones 1 and 2 would be given priority in the distribution of coking coal. He said:

"Zone 1 consists of Kavaklidere, Kucukesat, Petekevleri, Seyranbaglari, Yenisehir, Kizilay, Sihhiye, Maltepe, Ulus, Cebeci, Bahcelievler and Emek. Zone 2 includes Cankaya, Gaziosmanpasa, Yukari Ayranci, Asagi Ayranci, Buyukesat, Incesu, Toprakli, Dikimevi, Demirlibahce, Altindag and Akkopru. However, should the existing number of stoves in these zones not be sufficient to consume all the coking coal allocated to Ankara, the coal will be supplied to other zones also. If coke utilization does not reach the desired level, we are considering supplying coke to citizens without coke ration cards as well."

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END

JPRS 82500

20 December 1982

Worldwide Report

ENVIRONMENTAL QUALITY

No. 381

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JPRS 82500

20 December 1982

WORLDWIDE REPORT

ENVIRONMENTAL QUALITY

No. 381

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NATIONAL CONSERVATION POLICY REPORT UNDER DEBATE

Canberra THE WEEKEND AUSTRALIAN in English 23-24 Oct 82 p 15

[Article by Jane Ford]

[Text]

DEVELOPERS and conservationists are taking up positions for what promises to be yet another long and possibly bitter struggle — but this time no particular piece of real estate is at stake.

Instead, the much wider terrain of a national conservation strategy for Australia is at issue.

A key discussion paper on the strategy already has brought wide but conflicting criticism from both sides.

Predictably, industry groups have accused the paper of going too far, saying it lacks balance, favors unnecessary legislation and regulation and takes no account of costs.

Equally predictably, the conservationists say it has not gone far enough and are calling for stronger controls over development, increased public participation and more definitive statements on conservation.

Some consensus must be reached by February when a national conference is to formulate a final national conservation strategy.

The strategy, being painstakingly nurtured by a small task force in the Department of Home Affairs and Environment, has arisen from a recommendation of the recently-formulated world conservation strategy. The recommendation has spawned a similarly exacting process in a number of other countries.

The aim is to draw up a strategy, agreed to by the widest community, which will help Australia achieve a sustainable level of development through conservation of its living resources.

The central document for public comment was drawn up last November after a seminar attended by industrialists, conservation groups, academics and public servants.

Since it was released for public discussion in May more than 500 submissions have poured in, a surprising 45 per cent of them from individuals.

The task force, under its director Dr George Wilson, is sifting through the sometimes laudatory, often critical and almost always widely divergent responses to produce a draft strategy acceptable to all.

Dr Wilson points out that almost all the responses to the discussion paper have supported the general concept of a national conservation strategy, and that both developers and conservationists have given it serious and detailed consideration. He believes there should be room for negotiation.

The industry groups, with their extensive resources, have prepared the most well argued submissions in what seems a well orchestrated campaign.

One of their strongest criticisms is the lack of balance between conservation and development and what they claim is an overemphasis on the preservation aspects of conservation.

The Australian Industries Development Association, which attacks the paper for being confused, woolly, and backward-looking, says it shows a serious lack of balance.

"Conservation is seen by the discussion paper as the ultimate aim of mankind, with development being required to adjust its activities accordingly," it says.

"This approach is inconsistent with the objective of integrating conservation and development goals."

However, Dr Wilson says this AIDA statement aptly sums up the whole thrust of the strategy. It is a conservation, not a development strategy — and if necessary development must adapt its activities.

"This is one point from which we don't intend to budge," he says.

Another major industry complaint concerns what it sees as an excessive concentration on legislation and regulation. AIDA has included a detailed nine-page submission on legislation, in which it maintains that the discussion paper largely rejects consultation between developers and the various levels of government. The preferred solution appeared to be more prescriptive regulation and more legal challenges of development activities, AIDA notes.

It warns that this approach will further the drift to an expensive and unwieldy and highly litigious American-type system. Unnecessary constraints on developers' activities could prejudice long-term development goals, with serious economic consequences for the community.

"The discussion paper is exhaustive in identifying perceived threats to living resources, it is silent on the dangers of unnecessarily constraining developmental activities," AIDA says.

The Confederation of Australian Industry and the Australian Mining Industry Council are particularly concerned that the courts will become responsible for conservation, whereas the responsibility for final decisions should rest with governments.

"A resort to more detailed legislation and the adversary form of the courts would make even more difficult the task of achieving the integration of conservation and development goals," the AMIC says.

However, conservation groups as well as a number of academics have stressed the need for more regulation of industry and legislation with "more teeth" to restrain development.

For instance the Australian Heritage Commission has emphasised the need to legislate to protect resources from short-term profit making.

The high cost of conservation proposals — particularly if introduced in the present economic recession — is another major industry concern.

AIDA points out that, at least initially, the strategy will have to find acceptance in an unfavorable economic climate. It would be foolish to embark on sweeping and potentially costly programs in "blind disregard of this climate," AIDA argues.

The National Farmers Federation accuses the strategy of largely ignoring practicability, cost/benefit calculations and financial implications of the proposals. CAI also argues that there has been no attempt to rigorously analyse the costs and benefits of conservation activity.

But Dr Wilson rejects these criticisms, saying it is not the task force's job to cost the options raised in the strategy but merely to lay down environmental guidelines.

The issue of public participation has also split the two camps, with conservationists pressing for much greater community involvement in development decision-making and industrialists, again predictably, calling for less.

Thus the Heritage Commission maintains that the rights of individuals to lodge objections, make public comment at inquiries and lodge appeals should be promoted in the strategy.

But the National Farmers Federation fears that the powers of community groups would be extended well beyond what society now regards as acceptable.

Other industry concerns include what CAI describes as the "glossing over" of the constitutional role of Commonwealth, State and local governments in conservation and the overall need for a much broader approach to the whole strategy.

However, conservationists and academics are much more concerned about the exact wording of the strategy, stressing the need for a much more detailed approach to such things as wildlife conservation, forestry, water, the impact of agriculture, soil degradation and one overwhelming concern — population growth.

The Australian Conservation Foundation criticises the paper for its implicit assumption that the Australian population can go on increasing, and the director of the Australian Museum, Dr Des Griffin, stresses that the strategy should make it clear that conservation of resources and improvement in the quality of life requires a long-term policy on population growth and size which recognises the limits of a very arid environment to support large numbers of people at a Western standard of living.

Some submissions go as far as totally rejecting the discussion paper, with groups such as the Victorian Sawmillers Association calling for its withdrawal.

Others, like the Fund for Animals Ltd, Australia, find it impossible to come to terms even with the underlying assumptions of the strategy.

While supporting many of its objectives, the fund rejects its failure to question the whole doctrine of unlimited economic growth.

"We argue that since the operating logic of the strategy rests upon a case of seeking compromise between development under growth conditions and conservation under stable ones — a relationship which is inherently conflictual — then we must reject the document as being impracticable."

Impracticable or not, the task force now has to reconcile these very divergent views by the end of November so that all of the 150 delegates who have been invited to the February national conference will have a draft strategy paper by Christmas.

Despite the apparently wide differences, Dr Wilson is optimistic that Australia could become the first country in the world to draw up and ratify its own national conservation strategy.

CSO: 5000/7518

EPA URGES TOUGHER AIR POLLUTION CONTROLS IN MELBOURNE

Melbourne THE AGE in English 4 Nov 82 p 3

[Article by Paul Chadwick]

[Text]

Monitoring had shown that acceptable levels of smog and lead in Melbourne's atmosphere were being exceeded, according to the Environment Protection Authority.

In its 1981-82 report, tabled in State Parliament yesterday, the EPA said control programmes should be introduced to reduce the levels of smog and lead and to increase visibility.

The report called for regulations to further reduce exhaust and fuel evaporation emissions from vehicles.

The EPA says unleaded petrol and a pollution device called an exhaust gas catalytic converter to control emissions could reduce pollution and improve fuel consumption.

It says vehicles equipped with the device would produce 50 percent less hydrocarbon and carbon monoxide emissions. The system might add $150 to the cost of vehicles, but this would be quickly offset by fuel economy and maintenance benefits.

"Average vehicle fuel economy is expected to improve by about 10 per cent. The catalysts can clean up the vehicle exhaust emissions and the engine can be designed and tuned to maximise fuel economy nad performance without using engine-based pollution control systems," the report says.

"Vehicle maintenance costs should be reduced by the equivalent of one cent per litre of petrol used."

A New South Wales State pollution control commission study had shown that a Holden Commodore 2.3 fitted with a catalyst system and with simple engine adjustments had reduced its city fuel consumption by 12 per cent. A Datsun 200B, similarly refitted, reduced its consumption over the same distance by 8 per cent.

The report says: "The two major current pollution concerns (in Melbourne) are photochemical smog and lead." Motor vehicles produced 70 per cent of Melbourne's nitrogen oxide, 40 per cent of hydrocarbons, 80 per cent of carbon monoxide and almost all the lead in the air.

Photochemical smog, which is caused by the reaction of nitrogen oxides and hydrocarbons, in sunlight, was a considerable problem in Melbourne, the report says.

The EPA air policy specifies that oxidant, a major component of photochemical smog, should not equal or exceed 0.15 parts per million (ppm) at any time and should not reach 0.12 ppm more than one a year. Between November 1981 and March this year oxidant exceeded 0.15 ppm eight times and 0.12 ppm 14 times.

The EPA's lead level objective "was regularly exceeded at two of the seven (monitoring) stations", the report says.

The station in Alexandra Parade, Collingwood, recorded the highest level. It was between 5.8 and 9 micrograms per cubic metre while the objective is only 1.5 micrograms per cubic metre.

While this station was close to a busy road and not typical of Melbourne's air, the readings "do indicate the potential levels in heavily trafficked areas," the report says.

In 1981-82, light pollution was reported on 99 days (92 in 1980-81) and significant pollution was recorded on 14 days (eight the previous year).

Visibility was 68 times worse than the air policy objectives.

The EPA says that the high failure rate of vehicles subjected to exhaust emission tests continued in 1981.

"Emission quality of vehicles is not significantly improving and the authority has been exploring various avenues to improve the situation. The generally poor tuning of most vehicles is a major reason for the high failure rate."

CSO: 5000/7520

SEWAGE DISCHARGE POLLUTING NSW'S HAWKESBURY RIVER

Sydney THE SYDNEY MORNING HERALD in English 4 Nov 82 p 11

[Article by Joseph Glascott]

[Text]

The Hawkesbury River would be polluted for more than half its length from Camden to Broken Bay by the year 2000 unless sewage discharge was controlled, the State Pollution Control Commission warned yesterday.

The commission in its annual report, which was tabled, announced the results of a three-year study of pollution in the Hawkesbury, Nepean River basin.

The commission said the studies showed that if nutrient-removal facilities were not installed at sewerage treatment works on the river, or other disposal methods adopted, the concentrations of nitrogen and phospherous nutrients in the river at low-flow levels would increase from two to 10 times by the year 2000.

In addition, the zones of the river affected would increase in length.

By the year 2000, the areas of the river affected by pollution to eutrophic conditions downstream of Penrith and downstream of Windsor would join together.

This would make one large river pollution zone from Penrith to Wiseman's Ferry.

The commission said that by the year 2000, the Hawkesbury River catchment area population would increase from the present 500,000 to about 800,000.

Sewage from this population would most likely be discharged into the river and its tributaries.

The problems already identified with the river system were:

- The extremely poor water quality of South and Eastern Creeks, both of which were the receiving waters for the largest sewage treatment works in the basin.
- The high levels of ammonia nitrogen in the main stream below these points.
- Extensive saline intrusion into the normally freshwater sections of the estuary during low river flows.

The commission said that the studies showed that if nutrient-removal or alternative sewage disposal strategies were not adopted, down stream of Camden, the poor conditions of the river at low flow will be intensified and extended into longer reaches of the river.

Although most of the problems occurred during low-flow periods, the low-flow conditions occurred 50 to 60 per cent of the time.

In droughts low flow of the river could occur over many successive months.

CSO: 5000/7520

STATE-FEDERAL CONTROVERSY FLARES IN FRANKLIN DAM ISSUE

Fraser-Gray Impasse

Melbourne THE AGE in English 28 Oct 82 p 3

[Article by Simon Balderstone]

[Text] CANBERRA. — The Australian Democrats yesterday introduced in the Senate a bill designed to save the Franklin River, and the Prime Minister, Mr Fraser, reaffirmed that the Government would not be withdrawing south-west Tasmania from nomination for the World Heritage list.

Mr Fraser told yesterday's joint party meeting that the Tasmanian Premier, Mr Gray, who said on Tuesday the Government would withdraw the nomination, knew the Government had no intention of withdrawing it.

But Mr Fraser also said listing on the World Heritage list did not necessarily mean the Gordon-below-Franklin dam would not go ahead.

His comment puzzled some Government officials, as under the World Heritage Convention, the Federal Government has obligations and responsibilities regarding the preservation of areas on the World Heritage list.

Mr Gray reacted angrily to Mr Fraser's statement and said the Prime Minister had no right to intervene in a matter which was purely one of Tasmanian sovereignty.

Mr Gray said his Government would continue to oppose World Heritage listing, which was against the interests of Tasmania and against the interests of the Federalist system.

He said it wase a pity Mr Fraser's "disappointing" decision had not recognised that fact.

In the Senate, the Democrats' spokesman on environment, Senator Mason, introduced the World Heritage Properties Protection Bill 1982. The bill would make it unlawful for anyone to take any action which adversely affects an area nominated for, or included in, a World Heritage listing.

The Federal Government nominatd the western Tasmania wilderness National Parks for World Heritage listing in November last year, and the World Heritage Committee will consider that nomintion at its meeting in December.

Senator Mason said his bill did nothing more than put into legislation the responsibilities that the Federal Government had accepted by endorsing the World Heritage Convention in 1974.

He said the end result of the bill would be to ensure that south-west Tasmania would be saved for future generations in accordance with Australia's obligations and would also mean that other areas already on the list would be given the full protection of Commonwealth law.

He said it was quite possible that the Federal Government could regulate to preserve the south-west, and all people concerned with the environment would welcome such a move.

"Unfortunately, we have waited and waited for the Federal Government to act. For the sake of the wilderness we can wait no longer," he said. "Roads are being gouged in to the proposed dam site. Quarries are being excavated and camps are being built. This activity has resulted in a serious fire in the area."

Senator Mason said political and economic arguments had little place in the debate, the essence of which was that south-west Tasmania was a magnificent wilderness area that had been recognised as such by State and Federal Governments, and that Australia had ratified a convention which gave it an obligation to ensure the heritage areas were fully protected.

There was no debate on the bill yesterday, and the attitude of the Labor Party to it has not yet been decided. However, the ALP platform policy is a "no dams" policy which involves a compensatory economic package to the Tasmanian Government.

The bill requires the support of the ALP, and at least one other senator to get through. Several Liberal senators are sympathetic to the contents of the bill.

Mr Fraser, and the acting Attorney-General, were asked several questions on the issue in the joint party room meeting yesterday.

They said the matter was to go to Cabinet soon, and would not disclose the contents of legal opinions the Government has received on its powers regarding south-west Tasmania.

WA Support for Tasmania

Melbourne THE AGE in English 2 Nov 82 p 6

[Article by Nigel Wilson]

[Text] PERTH. — States' rights considerations mean that Western Australia will not back plans to put part of south-west Tasmania, containing the Gordon and Franklin rivers, on the World Heritage list.

Support for the Tasmanian Government in its dispute with the Commonwealth on the issue was announced at the weekend by the Premier, Mr O'Connor. It is the latest in a number of allegations by Mr O'Connor since he succeeded to the Premiership earlier in the year that Canberra is not respecting the sovereignty of the States.

He said the State Government believed the Commonwealth should not nominate any area for inclusion in the World Heritage list without the approval of the State or territory concerned.

As far as the latest clash was concerned, the Commonwealth had nominated 11 per cent of the area of Tasmania without the Tasmanian Government's approval.

If a buffer zone around the Gordon and Franklin rivers was included, the area nominated represented 23 per cent of the total area of Tasmania.

Mr O'Connor said the Tasmanian Government was deeply concerned that the Commonwealth might try to use its foreign affairs power to take control of the area once it was included in the World Heritage list.

"This would be a totally unacceptable abuse of Commonwealth power and an unforgivable assault on State sovereignty," he said.

Conservationists in Western Australia are concerned that the Premier's remarks are directed more against moves to nominate parts of WA for the list.

A spokeswoman for Friends of the Earth in Perth said one area of concern was a proposal for a joint Australian-US amphibious training area on the north-west coast.

CSO: 5000/7514

STATE-FEDERAL FEUD OVER TASMANIAN DAM RISES TO NEW LEVEL

Party Differences

Canberra THE AUSTRALIAN in English 9 Nov 82 p 1

[Article by Brian Hill]

[Text]

THE Federal Opposition yesterday set itself on a collision course with the Tasmanian ALP by pledging to block construction of the controversial Franklin River dam.

The Leader of the Opposition, Mr Hayden, said the Federal Labor Party agreed with the Fraser Government that Tasmania's south-west wilderness area must be included on the World Heritage List.

"The inevitable consequence of this bi-partisan policy is that any dam development proposed for the area cannot be allowed to proceed," Mr Hayden said.

But the State ALP Leader in Tasmania, Mr Wriedt, replied: "The Tasmanian people clearly want the Gordon-below-Franklin power development scheme to proceed, and it will be supported by the State Opposition.

"I do not accept that any body outside this State has a right to go clearly against the wishes of the majority of the Tasmanian people."

An almost unprecedented situation has now been reached whereby a State Labor Party and a State Liberal Party are united against a Federal Liberal Government and a Federal Labor Opposition.

Last night the Tasmanian Premier, Mr Gray, was quick to support Mr Wriedt.

He said: "The dam is going to be built no matter who interferes, be it the Prime Minister or Mr Hayden."

At the same time, Mr Hayden criticised the Fraser Government for what he said was its failure to exert its authority following a request by the Tasmanian Government for the Federal Government's nomination of the wilderness area to be withdrawn from the World Heritage List.

Mr Hayden claimed that confidential advice from the Attorney-General's Department stated that a nation having once identified an area as part of its "natural heritage" could not claim it was no longer such an area "simply because its preservation is politically difficult or expensive, or because it is an impediment to industrial works".

According to Mr Hayden, Labor's seven-point program would ensure that:

THE Federal and Tasmanian Governments would explore alternative economically viable power generation projects with the aim of funding them on terms comparable to those which would have applied for the proposed south-west Tasmanian power generation development project.

TOTAL federal payments to Tasmania would not fall in real terms.

THE proposed Tasmanian Development Corporation would be supported.

LABOR'S regional economic and industrial development policies would be applied with specific attention to the special disabilities and needs of Tasmania.

THE Tasmanian Government, in co-operation with the Australian National Parks and Wildlife Service, would be encouraged to establish a South-West Tasmanian Management Authority responsible for the management of the World Heritage area extending to include the entire south-west conservation area.

FINANCIAL assistance for capital and recurrent expenditure by the authority would be provided, including payments to the Tasmanian National Parks and Wildlife Service to meet its responsibilities in the area.

A NUMBER of initiatives to assist Tasmania's tourist industry would be instituted.

Opposition Pressure in Canberra

Perth THE WEST AUSTRALIAN in English 9 Nov 82 p 32

[Excerpt] Canberra: The Federal Opposition yesterday called on the Government to declare whether it would intervene to stop the proposed damming of the Franklin River in the south-west Tasmania.

The Labor leader, Mr Hayden, said that the Government had a legal and moral obligation to stop the project going ahead.

"Although Mr Fraser has not declared that obligation it is quite clear that he must," Mr Hayden said.

"Otherwise it makes the whole gesture (of nominating the area for World Heritage listing) a hypocritical one and puts it in direct conflict with the obligations under the World Heritage Convention."

Dissent in Tasmanian Ranks

Canberra THE AUSTRALIAN in English 10 Nov 82 p 30

[Article by Peter Dwyer]

[Text]

THE Tasmanian Government has been accused by a group of its own employees of making false claims in support of its decision to dam the Franklin River for hydro-electricity.

A rebel group of 850 public servants from 32 departments and instrumentalities has paid for a newspaper advertisement calling on the Federal Government to "stop the Franklin destruction".

The public servants from all levels of the government workforce include employees of the Hydro-Electric Commission (which is building the dam) the Premier's Department and the Treasury. The three departments are all administered by the Premier, Mr Gray.

The advertisement was placed in Melbourne in an attempt to push the dam row as an issue in the coming Flinders federal by-election.

The federal ALP has announced it will stop the project if it wins Government at a national poll and there is growing pressure on the Prime Minister, Mr Fraser, to halt the dam.

The advertisement accuses the Tasmanian Government and the Hydro-Electric Commission of putting forward false arguments in support of the project, contrary to information it was given by public servants.

It has been authorised on behalf of the group by the former Premier of Tasmania, Mr Doug Lowe, now an Independent, who said yesterday the advertisement had been instigated from within the Public Service.

He said: "It shows that there is a point at which decent, average Tasmanians who are working for the Government recoil at the distortion of information that they have provided to the Government.

"These are not just junior public servants, there are some very senior officers behind this."

It was Mr Lowe's Labor Government which recommended that the Federal Government nominate the Franklin River area of south-west Tasmania for inclusion on the World Heritage List.

The nomination is likely to be approved by the World Heritage Committee of the United Nations before Christmas and will put the onus on the Federal Government to stop the dam.

The advertisement, headed "South-west Tasmania — World Heritage" features a photograph of part of the Franklin River and says: "Let's separate the facts from the fiction".

It then lists six examples of where the group believes the Government or the Hydro-Electric Commission has made false claims in an attempt to justify the dam, then provides what it claims are the facts.

It says that, contrary to claims by Mr Gray, only 11.3 per cent — not 25 per cent — of south-west Tasmania will be affected by World Heritage listing and that, according to the South-west Tasmania Resources Survey 1981, the area is poor in timber and mineral resources.

It argues that Tasmania's hydro-electricity is not economical and gives an example of Queensland power being quoted to BHP at a cheaper rate.

The advertisement also denies claims that Tasmania will need the extra power from the dam, that the dam will create 3500 jobs, that it will boost tourism in the south-west and that the Franklin is a "brown, leech-ridden ditch, unattractive to the majority of the people".

Expose of Government Claims

Melbourne THE AGE in English 10 Nov 82 p 7

[Advertisement: "Southwest Tasmania--World Heritage"]

[Text]

SOUTHWEST TASMANIA — WORLD HERITAGE

Rock Island Bend, Lower Franklin River

Let's separate the **FACTS** from the **FICTION.....**

Fiction: The (World Heritage) proposal would involve locking 25%, nearly a quarter of Tasmania, up in perpetuity........ The SouthWest contains hydro resources, mineral resources, forestry resources which are absolutely vital to the well-being of this State. *(Premier Gray, A.B.C. Radio Programme A.M., 17/10/82)*

Fact: **11.3% of Tasmania was nominated in 1981. The ONLY areas nominated were existing National Parks. The area is poor in timber and mineral resources *(SouthWest Tasmania Resources Survey, 1981)*. There are good alternatives to development of the region's hydro-electric potential.**

Fiction: Tasmania's hydro power is economical — the average price is 1.8 cents per unit.*(Tasmanian Government -H.E.C. advertisement, 22/10/82)*

Fact: **Under secret, long-term contracts a few energy-intensive industries pay less than 1 cent per unit. Domestic consumers pay 5 cents, commercial users considerably more. New industries no longer see Tasmania's electricity as cheap. B.H.P. management was quoted 4 cents per unit for Tasmanian power, compared to 3 cents in Queensland. *(Evidence to Senate Select Committee, 2/5/82)***

Fiction: Tasmania needs another power project *(Tasmanian Government - H.E.C. advertisement, 22/10/82)*

Fact: **The H.E.C.'s own figures show growth in power demand has slumped. Electricity consumption in July-August this year was actually 5% BELOW 1981 levels. Meanwhile the Pieman scheme is due to come fully on line by 1988, increasing Tasmania's power supply by 17%.**

Fiction: Constructing hydro schemes creates 3500 jobs in Tasmania. *(Tasmanian Govt. - H.E.C. advertisement. 22/10/82)*

Fact: **The $453 million Gordon-below-Franklin scheme would employ an average field work-force of almost 600 men during the twelve year construction period. Only 29 employees will be required to operate the scheme on completion *(H.E.C. Report, Appendix 8, 1979)***

Fiction: Hydro schemes — a bonus to Tasmanian tourism. *(Tasmanian Government - H.E.C. advertisement, 22/10/82)*

Fact: **The unspoilt Lower Gordon River is Tasmania's foremost natural tourist attraction. Some tour operators fear that the Gordon-below-Franklin scheme will destroy the riverside scenery.**

Fiction: For 11 months of the year the Franklin River is nothing but a brown ditch, leech-ridden, unattractive to the majority of people. *(Premier Gray, The Examiner, 18/9/82)*

Fact: **The Franklin — Lower Gordon River system is the centrepiece of the nominated World Heritage area, which contains many rare plants and animals, temperate rainforests 2000 years old and archaeological sites of world significance. The area offers scenic, wilderness and recreational resources to people of all ages and fitness.**

AS TASMANIANS AND AUSTRALIANS, WE ARE PROUD OF OUR SOUTHWEST. WE CALL ON THE FEDERAL GOVERNMENT TO STOP THE FRANKLIN DESTRUCTION AND TO ACTIVELY PROTECT ITS SOUTHWEST WORLD HERITAGE NOMINATION.

SPONSORED IN THE PUBLIC INTEREST BY

850 TASMANIAN GOVERNMENT EMPLOYEES

from 32 departments including Dept. of Agriculture, Attorney-General's Dept., Education Dept., Dept. of Environment, Forestry Commission, Hydro-Electric Commission, Lands Dept., Dept. of Main Roads, Mines Dept., National Parks and Wildlife Service, Premiers Dept., Dept. of Tourism., Treasury Dept.

Authorised by the Hon. Doug Lowe, M.H.A., Parliament House, Hobart.

CSO: 5000/7518

NSW GOV'T OPTS FOR CONSERVATION IN RAINFOREST ISSUE

Background to Decision

Sydney THE SYDNEY MORNING HERALD in English 19 Oct 82 p 12

[Article by Mike Steketee]

[Excerpts] The Minister for Energy, Mr Landa, is cutting short an overseas trip to take part in today's Cabinet debate on the future of the State's remaining rain forests.

The decision by Mr Landa to return several days early from talks in Asia indicates both how crucial the issue has become in the Government and how close a decision is likely to be.

Mr Landa, who will go virtually straight from Tokyo into the Cabinet Room, is a former Minister for Planning and Environment and a strong supporter of the preservation of rain forests.

It appeared yesterday there was narrow majority support for the preservation of rain forest areas such as Washpool, linked with a scheme to provide alternative employment for the hundreds of timber workers affected.

"The trees have got the numbers on Washpool," was how one supporter of preservation put it.

Sources said yesterday that Cabinet would concentrate on Washpool but its decision would set the framework for a comprehensive policy on rain forests.

The stakes are high on both sides. Supporters of preservation argue that, apart from the long-term environmental issues involved, the decision is vital to the very future of the Labor Party.

They argue that an increasing number of young voters feel strongly about conservation issues and that a pro-logging decision by Cabinet would see large number of them deserting the ALP in favour of parties such as the Australian Democrats.

On the other side, members of the Government such as the Minister for Industrial Development and Decentralisation, Mr. Day, and the Minister for

Local Government and Lands, Mr Gordon, have argued strongly and publicly in favour of logging.

Washpool is in Mr Day's electorate of Clarence and supporters attribute the increase in his majority in the election last year--in a seat the National Party was hoping to win--partly to his strong stand on rainforests.

The importance of Washpool to conservationists is, they say, that its 17,400 rectares of rainforest is the largest such area left in NSW and is inside one of the State's few wilderness areas. [as published]

Areas at Stake

Sydney THE SYDNEY MORNING HERALD in English 22 Oct 82 p 14

[Article by Joseph Glascott]

[Text] Seven areas of rainforests on the North Coast will be protected if State Cabinet next week adopts a rainforest policy accepting the submissions of conservationists.

After Cabinet discussions on Tuesday, Government authorities said an overall rainforest decision was expected to be made next week.

The executive secretary of the National Parks Association, Mr Peter Prineas, said yesterday the association wanted to protect:

.The Washpool Forests of about 40,000 hectares, west of Grafton, the largest unlogged rainforest in NSW.

.The Nightcap Range forests, north-west of Lismore, of about 4,000 hectares, taking in Goonimbah State Forest and parts of Whian Whian Forest.

.The Border Ranges on the Queensland border taking in Wiangarie and Roseberry Forests.

.The Murray Scrub, about 1,000 hectares, on the Richmond Range, west of Lismore.

.The Black Scrub, on the escarpment west of Bellingen, taking in most of the Bellinger State Forest.

.The upper Forbes River Valley and parts of Mt Boss and the adjoining Banda Banda State Forests, of about 12,000 hectares, in the Hastings Valley west of Wauchope.

.Additional areas of the Barrington Tops north of Newcastle to include rainforests and hardwood forests on the slopes of the plateau.

One of the long-standing arguments to be decided by Cabinet is the definition of rainforest.

Sawmillers and the Forestry Commission classify rainforests in a different way from conservationists.

Mr Prineas said: "The issue of what is a rainforest was argued exhaustively at the Terania Creek inquiry.

"The Forestry Commission defines rainforest according to its timber potential. Ecologists define it on a wider basis.

"Rainforest cannot be artifically defined by lines on a map.

"Plants and animals of the rainforest don't accept such lines.

"The rainforest and its flora and fauna species intermingle with surrounding hardwood forests."

Mr Prineas said that under the Forestry Commission definition any forest growing hardwood trees was not a rainforest.

But hardwoods could be growing in an area with rainforest tree species.

"Ecologists claim that such an area with strong representation of rainforest trees is part of the rainforest," he said.

The director of the NSW Forest Products Association, Mr Keith Jordan, said if Cabinet adopted a policy preventing logging in the seven forest areas it would be disastrous for the timber industry.

He said it would cut the industry on the North Coast in half.

"It is suggested that the timber industry can obtain supplies from other forests," he said.

"But if we are forced to over-cut the remaining forests, the problems will only be delayed for another 15 to 20 years.

"If the major sawmilling companies can't have a guaranteed life beyond 15 years, they will move out of the industry."

Job Loss Predictions

Sydney THE SYDNEY MORNING HERALD in English 23 Oct 82 p 3

[Article by Joe Glascott and Jack Taylor]

[Excerpts] A judge's decision that an environmental impact statement must be prepared before logging could start in a State forest could lead to the loss of 1,800 jobs in the NSW timber industry, the secretary of the Labor Council, Mr Unsworth, said last night.

Mr Unsworth said the decision would prevent even small forestry operations taking place all over the State unless an environmental impact statement was prepared first.

The executive director of the NSW Forest Products Association, Mr Keith Jordan, said the decision could be used to stop all logging in the State overnight.

Justice Cripps handed down the decision in the Land and Environment Court yesterday, ordering that the Forestry Commission of NSW and the Standard Sawmilling Company Pty Ltd be restrained from logging in the Goonimbar State Forest, in the Nightcap Ranges near Lismore, until an environmental impact statement had been prepared and the commission had considered it.

The loss of jobs would affect 21 towns including Gloucester, Kempsey, Casino, Armidale, Queanbeyan, Bega and Batemans Bay.

Mr Jordan said the sawmilling industry could be required to carry out environmental impact statements before establishing any logging in the State.

"A normal commercial environmental impact statement costs at least $35,000," he said.

"The State Government would not pay for it. Sawmillers would be asked to pay and the cost would be passed on to the consumer.

"If sawmilling companies have to provide a statement every time they want to put a road in, the industry will not be economically viable."

The executive secretary of the National Parks Association, Mr Peter Prineas, said, "It means that from now on the logging of our native forests will have to be carried out with genuine regard for the protection of the environment.

"It is an indication that the new environmental legislation which came into force in September, 1980, is going to work."

Justice Cripps decided that the Goonimbar logging project would significantly affect the environment.

The forest, about 30km north of Lismore was described as the southern end of a spectacular mountain range encircling the Tweed Valley.

Cabinet Decision

Sydney THE SYDNEY MORNING HERALD in English 27 Oct 82 p 1

[Excerpts] State Cabinet decided yesterday to protect most of the remaining rainforests in NSW by taking them into national parks.

The Premier, Mr Wran, announcing the Cabinet decision, said rainforest logging would be phased out almost immediately.

Cabinet had allocated alternative areas of forest to sustain the timber industry and jobs, and there was no reason for any jobs to be lost in the industry on the North Coast.

Mr Wran said the Government would provide $1 million to help sawmills change to new technology to avoid the use of rainforest timbers.

"The Government takes the view that the rainforests are part of our heritage," he said.

"There might be small pockets which can still be logged, but the large, controversial areas have been decided upon and will be preserved.

"We have had to seek a sensible balance between preserving the rainforests for succeeding generations and the needs of people and industry today.

"We will not have made everyone happy. There will be dissent, but they will get nowhere at this stage.

"I hope this decision will be the end of the rainforest argument."

Affected Sites

Sydney THE SYDNEY MORNING HERALD in English 27 Oct 82 p 1

[Article by Joe Glascott]

[Text] Cabinet's decision means that about 50,000 hectares of rainforests will be preserved in national parks.

The remaining allocation of rainforest timbers to Big Rivers Timbers Pty Ltd for 1982-83 will be halved, and Government will help the mill at Grafton get alternative non-rain forest timbers.

Hardwood supplies for the Grafton area will be obtained from outside the Washpool area.

The Washpool forests west of Grafton, except for three areas, will be reserved as a national park.

Cabinet decided that 3,197 hectares of Goonimbar State Forest and 975 hectares of Whian Whian State Forest, north-west of Lismore, will be preserved as the Nightcap National Park.

The Border Ranges National Park will be extended to include Wiangarie, Rosebery and part of Mt Lindesay State Forest. Gradys Creek flora reserve will be included in the park without logging.

The Black Scrub, comprising the western section of the Bellinger River State Forest, will be included in the New England National Park.

Rainforest areas in the Hastings Valley, west of Wauchope, will be added to Werrikimbe National Park and Mt Seaview Nature Reserve.

A decision on another area claimed by conservationists, an extension of the Barrington Tops National Park, has been delayed for further study.

Park Area Increases

Sydney THE SYDNEY MORNING HERALD in English 28 Oct 82 p 3

[Article by Joseph Glascott]

[Text] Revised estimates of the proposed rainforest national parks bring their total area to about 90,000 hectares.

State Cabinet on Tuesday decided to ban logging in most NSW fainforests and incorporate them in national parks.

The rainforests were estimated by conservationists to cover 50,000 hectares.

The National Parks and Wildlife Service and the National Parks Association said yesterday the new rainforest parks would be:

Border ranges, 30,000 ha, Washpool, near Grafton, 28,500 ha, Hastings Valley, near Wauchope, 14,700 ha.

Black Scrub, near Bellingen, 6,100 ha.

Nightcap Ranges and Terania 4,500 ha, Dorrigo forest, 4,200 ha, Murray Scrub, near Kyogle, 1,000 ha.

If an area on the Barrington Tops, north of Newcastle, is added this will cover another 25,000 ha.

The National Trust said the decision was a milestone in the history of conservation in NSW.

The president of the trust, Mr Richard Rowe, said the Premier, Mr Wran, the Deputy Premier, Mr Ferguson, and the Minister for Planning and Environment, Mr Bedford, deserved special congratulations for their efforts.

"It is not true as some have suggested that Cabinet has yielded to a vocal minority."

"The trust represents 30,000 members in NSW.

"An opinion poll conducted for the trust and the Australian Conservation Foundation showed that 69 per cent of the population favoured preservation of the rainforest."

Mr Jim Somerville, vice-chairman of the Colong Committee, who has been involved in the rainforest preservation campaign from the outset, said yesterday:

"When we began the campaign in Sydney in 1975, we had no idea that seven years later all logging in rainforests would cease and that the rainforests would be included in a number of new parks."

The executive director of the NSW Forest Products Association, Mr Keith Jordan, said yesterday Mr Wran had fallen for the propaganda of the preservationist movement that forests cannot survive with logging.

This was totally contrary to commonsense and the principle of multiple use.

"The mythical alternative supplies are simply not there," he said.

CSO: 5000/7513

QUEENSLAND COMMITTEE TO STUDY RADIOACTIVE SAND WASTE

Brisbane THE COURIER-MAIL in English 19 Oct 82 p 1

[Article by Tony Koch]

[Text] **STATE Cabinet yesterday approved the formation of a special committee to speed investigations into the dumping of radioactive sand in south-east Queensland.**

The Health Minister, Mr Austin, said last night the committee would avoid time-consuming red tape. It will comprise members of the Health, Local Government and Mines Departments.

Mr Austin said Cabinet had rejected any suggestion that the State Government would be liable for any financial compensation to affected householders.

He said: "The Queensland Government has done everything possible to arrest the problem. Charges that it has been remiss cannot be substantiated.

"The Government is faced with a serious problem that has probably been around for 25 years, and attempts to politicise it are reprehensible.

"Any person who feels he might have contaminated sand on his property has only to ring the Health Department with the details and the matter will be investigated without delay.

Quicker job

"The only thing we ask is that before he calls, the caller attempt to find out who supplied the sand, the amount, when it was delivered and, if possible, where it came from.

"If he is able to ascertain those facts, it will certainly make our job much easier and quicker."

Mr Austin said the initial concern was to identify all possible mineral sand processing sites and follow up any distribution of tailings which could contain high radioactivity.

"We are appealing to the public to let us know of any site which could have been used for processing mineral sand in the last 25 years so we can run a check on them."

Mr Austin said it would be "over-dramatising" to say there was any imminent danger to human beings who had contaminated sand in their houseyards, or to young children playing in sandpits.

"For a child to be endangered, he or she would have to spend 15 to 20 years in the contaminated sandpit," Mr Austin said.

"Where we have a real problem is homes where a family with young children might live for many years exposed to high levels of radioactivity."

Queensland spokesman for the Australian Democrats, Mr Mike West, criticised the Government for inaction and accused it of covering up the seriousness of the situation.

Mr West said it was scandalous that the Government was not prepared to "pick up the tab" for the cost of neutralising any areas discovered to contain contaminated sand.

"At the very least, the mining companies should accept responsibility if for no other reason than to gain some respectability in the eyes of the general public which has been hoodwinked into believing it has been buying contamination-free top dressing for years," he said.

'Negligent'

"The Health Department is supposed to oversee the general well-being of Queensland citizens, yet we find here a grossly negligent act has been occurring for more than 25 years.

"Mr Austin told us 10 months ago that everything was okay in regard to radioactivity in sand and there was nothing to worry about.

"If we cannot believe him, where does that leave us with his assurances on such things as the pesticide 24D, uranium enrichment and so on?" Mr West said.

CSO: 5000/7514

RESEARCH VESSEL DEVELOPED TO MONITOR WATER POLLUTION

Canberra THE AUSTRALIAN in English 20 Oct 82 p 17

[Text] A SQUEAKY-clean 8m vessel launched in Perth yesterday will help provide answers to the grimy problems of water pollution.

The Djinnang II is a research tool developed at a cost of $350,000 at the University of Western Australia to monitor mixing processes in lakes, reservoirs and oceans.

Its sophisticated equipment will help scientists predict the movement of pollutants, nutrients and biological organisms through bodies of water, providing important data for planning and conservation decisions.

The work has implications for the siting of sewage and water outfalls and recreation areas and for understanding the ecology of water areas. As well, the fundamental research into fluid dynamics has relevance in oceanography, meteorology and limmology — the study of lakes.

The Djinnang II has been built for the Centre for Environmental Fluid Dynamics, one of the 10 centres of excellence set up at universities and institutes this year. It will also be used by the university's Centre for Water Research — a mission-oriented centre working on solutions to practical problems.

A major advantage of the vessel is that it will allow study of small-scale mixing rather than oceanic effects.

Its sophisticated computer equipment will also give on-the-spot comparison of measurements being taken against earlier predictions. This will allow researchers, for example, to immediately shift the sensors collecting data in order to gain more information about particular processes.

The Djinnang II has three computers interlinked to allow data to be transferred between them. It also has a series of new instruments designed to measure salinity, temperature, velocity and water quality fields.

The vessel will be used for field trips of about 10 days each and will accommodate up to five people.

CSO: 5000/7515

COST OF DROUGHT TO CROPS, HERDS, WATER LEVELS ASSESSED

Situation in Queensland

Brisbane THE COURIER-MAIL in English 6 Nov 82 p 12

[Text] The Queensland drought had cost about $160 million in agricultural production losses this year, the Primary Industries Minister, Mr Ahern, said yesterday.

Mr Ahern said that with the official declaration this week of three more drought-stricken shires, 25 percent of the state was officially drought affected.

"The most significant loss is in wheat, where at least $125 million has been lost," Mr Ahern said.

"The wheat harvest now nearing completion is expected to yield 630,000 tonnes, compared with 1,500,000 tonnes last year.

"In pastoral areas, more than a quarter of the state's beef herd and 30 percent of the sheep flock are in 20 of the drought declared shires," he said.

Stock owners in the shires declared drought-stricken are eligible for federal and state concessions in freight and fodder costs.

The drought is expected to lead to a meat shortage next year. T. A. Fields Pty Ltd marketing manager, Mr Jack Mulherin, said yesterday stock which normally would not be on the market were being killed now.

The drought, affecting many grazing areas of the State, had created a general shortage and producers were selling stock they would usually keep for fattening and sale next year.

Mr Mulherin said the situation was grim, but it was not being felt by the public.

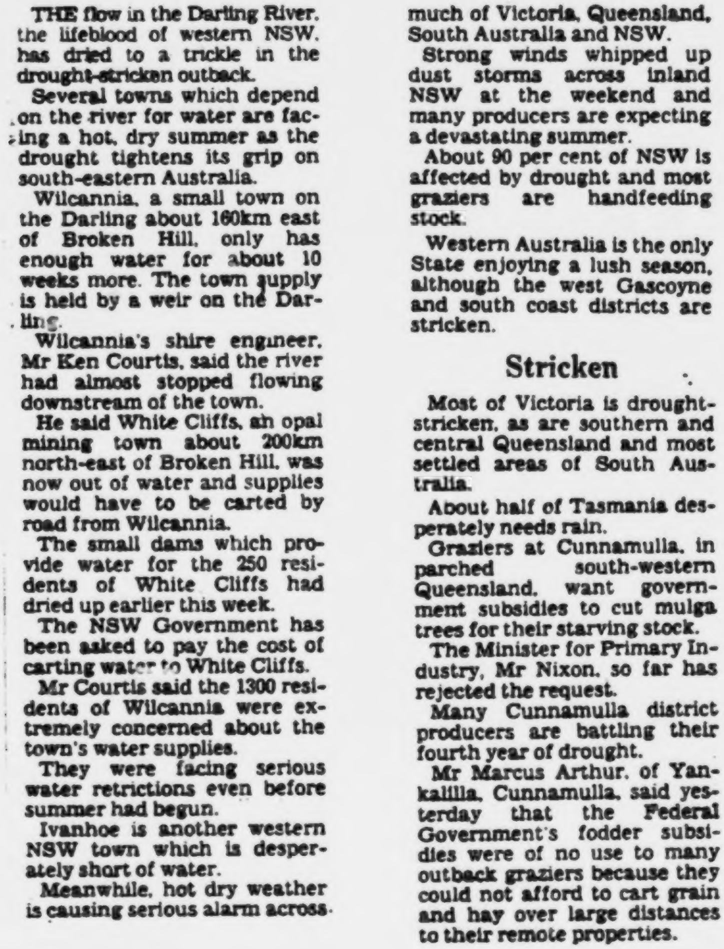
He said: "There is never a domestic shortage of beef in Australia. We only eat half of what we produce."

Effect on Darling River

Canberra THE AUSTRALIAN in English 3 Nov 82 p 2

[Article by Vernon Graham]

[Text]



THE flow in the Darling River, the lifeblood of western NSW, has dried to a trickle in the drought-stricken outback.

Several towns which depend on the river for water are facing a hot, dry summer as the drought tightens its grip on south-eastern Australia.

Wilcannia, a small town on the Darling about 160km east of Broken Hill, only has enough water for about 10 weeks more. The town supply is held by a weir on the Darling.

Wilcannia's shire engineer, Mr Ken Courtis, said the river had almost stopped flowing downstream of the town.

He said White Cliffs, an opal mining town about 200km north-east of Broken Hill, was now out of water and supplies would have to be carted by road from Wilcannia.

The small dams which provide water for the 250 residents of White Cliffs had dried up earlier this week.

The NSW Government has been asked to pay the cost of carting water to White Cliffs.

Mr Courtis said the 1300 residents of Wilcannia were extremely concerned about the town's water supplies.

They were facing serious water retrictions even before summer had begun.

Ivanhoe is another western NSW town which is desperately short of water.

Meanwhile, hot dry weather is causing serious alarm across much of Victoria, Queensland, South Australia and NSW.

Strong winds whipped up dust storms across inland NSW at the weekend and many producers are expecting a devastating summer.

About 90 per cent of NSW is affected by drought and most graziers are handfeeding stock.

Western Australia is the only State enjoying a lush season, although the west Gascoyne and south coast districts are stricken.

Stricken

Most of Victoria is drought-stricken, as are southern and central Queensland and most settled areas of South Australia.

About half of Tasmania desperately needs rain.

Graziers at Cunnamulla, in parched south-western Queensland, want government subsidies to cut mulga trees for their starving stock.

The Minister for Primary Industry, Mr Nixon, so far has rejected the request.

Many Cunnamulla district producers are battling their fourth year of drought.

Mr Marcus Arthur, of Yankalilla, Cunnamulla, said yesterday that the Federal Government's fodder subsidies were of no use to many outback graziers because they could not afford to cart grain and hay over large distances to their remote properties.

Rice, Cotton Declines

Canberra THE AUSTRALIAN in English 3 Nov 82 p 2

[Article by Bruce Newton]

[Text] AUSTRALIA'S production of rice and cotton may be cut almost 50 per cent by drought.

NSW produces 90 per cent of the nation's rice and 80 per cent of the cotton but because of restrictions by the NSW Water Resources Board, farmers this summer will be forced to seed smaller areas of both irrigated crops.

The cotton-producing areas in the north-west of the State, from the Macquarie River to the Queensland border, have been the worst hit. Water allocation in the Namoi Valley has been cut to 10 per cent of usual availability.

The Gwydir Valley has 15 per cent of its usual allocation, the Macintyre Valley 30 per cent and the Macquarie Valley 60 per cent.

The rice-producing areas in the south-west, from Griffith to the Victorian border, have been cut to 85 per cent in the Murray Valley and 70 per cent in the Murrimbidgee irrigation area.

Many farmers have already used water usually reserved for rice and cotton on winter crops, so their water reserves are drastically reduced.

Unless rain falls soon many farmers will run out of water by January.

Mrs Patricia Clifton, of the Water Resources Board, said many farms had used their water allocations early in the hope that rain would fall to help their summer crops.

"I don't think they were being at all irresponsible; every farmer has to gamble," she said.

"In some cases, it was certainly bad planning, but if they hope to get some extra water allocated they won't get it, because there won't be any to give."

Mr Frank Cutting, of the Department of Agriculture, said there had been 30 per cent less planting of cotton this year than last year.

Speculative

"At worst, production may be down by 50 per cent, but that is purely speculative at this stage," he said.

"If there is good rainfall in the first three months of next year then we will still have an excellent season.

"If you've got water in the soil at planting that will carry the seeds through to Christmas. One more watering and you will get some crop.

"But you need more watering to make a good crop."

Rice and cotton farmers will have to decide in December whether to water as much crop as possible and hope for rain or to conserve their water and grow a smaller crop.

CSO: 5000/7519

SOIL CONSERVATION EFFORTS SUFFER FROM LACK OF FUNDS

Canberra THE AUSTRALIAN in English 29 Oct 82 p 14

[Article by Geoff Sorby]

[Text]

IT CAN be argued that Australia is blowing away and nobody, particularly the Federal Government, appears to care a damn.

In 1980 a much vaunted national soil conservation program was announced with a special $3 million dollar grant from the Federal Government.

By 1986 the Government was to have been pumping $12 million a year to help stop Australia's land degradation.

The program to try and save the estimated 51 per cent of arable land in Australia subject to soil erosion followed a top level State and Federal Government inquiry released in April 1978.

The national soil conservation program was officially announced in 1980 after the then minister for national development, Mr Kevin Newman, admitted the previous year that Australia's land resources were in jeopardy.

And so in a classic case of political pork-barrelling the Government announced the start of its conservation program during the 1980 election campaign.

Ruthless

But the program was short lived.

The deft hand of the Committee of Review of Commonwealth Functions, the celebrated "Razor Gang", struck in April last year, withdrawing the funds.

It recommended, against all advice, that the allowance for soil conservation be built into the tax-sharing base between the States and the Federal Government.

It gave no requirements or guidelines as to how the States were to allocate those general revenue grants.

The results of this ruthless federal action were immediate and far reaching.

State governments, already battling to balance their own budgets, took the only course possible — they cut down on their own conservation programs, reducing money directly available, and even more dangerously, cutting skilled staff in their conservation departments.

These measures were taken despite easily obtained evidence showing just how bad the situation is in Australia.

For every tonne of grain produced, 13 tonnes of topsoil are lost. On the famous Darling Downs in Queensland, soil losses have reached 50 tonnes a hectare in some places.

In Victoria alone there is about 100,000 hectares of land affected by salinity.

And throughout the continent the same story is repeated as wind, water and animals combine with unsuitable land management to cause damage to the long-term stability of the land.

The Federal Labor Party spokesman on primary industry, Mr John Kerin, has described the problem as one of national importance.

With primary industries producing half of Australia's export income and 8 per cent of our gross domestic product, he is right to press the alarm bell.

Says Mr Kerin: "The bottleneck in the system is in the planning, surveying and design of the earth works. There simply aren't enough people doing the work fast enough.

"It is the Commonwealth's function to provide leadership and provide the support for a national program. Land degradation is a national problem.

"The Federal Government cannot simply pass off the management of this resource as a State matter. They certainly don't do that for other national resources such as uranium and petroleum."

States are notorious for their preference for short-term politically-expedient policies. That is well understood. And that should be sufficient to remove any doubts as to whether there is a role for the Federal Government in soil conservation.

But it is the findings, conclusions and recommendations of the ill-fated 1978 federal and State governments' soil conservation study that underlines the vital importance of soil conservation and gives specific advice on how to at least halt the tidal wave.

The report recommended that soil conservation activity in Australia be intensified, extended and better integrated with rural industry policy and planning for coastal, urban, recreational and mining areas.

Structural adjustment and changing circumstances in rural industries make it necessary and possible for soil conservation to be more effectively incorporated in changed farm management practices and methods.

Land capability issues are of growing importance in coastal, mining and urban planning and development.

Funding

Parallel action is required by governments in research, cooperative planning, institutional changes and more effective liaison and co-ordination. Increased funding is also needed.

Some of the report's main recommendations were:

THE strengthening of farm advisory and extension services so that the general standard of land management practices is improved.

HIGH priority for urgently required works in areas where the cost is relatively small when compared with the anticipated value of rural production, the value of public assets threatened by land degradation, or future costs of control.

REVIEWING the long-term future of agricultural and pastoral activity in arid land and other areas where the value of production is low relative to the necessary costs of soil conservation and where the environment is often fragile.

BETTER integration of policies for soil conservation with those allied activities.

BETTER co-ordination of research and initiation of joint federal-State projects.

IMPROVEMENTS in the collection, analysis and use of land resource information.

The report also said that the Federal Government's active participation with the States was necessary to achieve an adequate level of soil conservation in Australia.

It recommended that the Federal Governemnt provide increased funds to the States for soil conservation.

It was suggested that a system of "matching" grants related to the extra soil conservation expenditure by each State would ensure an expanded effort.

Encouragement would thereby be given to initiatives, in particular States, so that the total expenditure on soil conservation in each State would reflect State priorities, based on perceived need and capacity for action.

Given the magnitude of the outstanding soil conservation task assessed by the study, it would be appropriate to double the level of expenditure (in constant prices) over this initial period.

In this case, total extra funds of some $20 million a year would be provided at the end of the period, with perhaps half coming from the Federal Government and half from the States.

This increase compares with total soil conservation authority expenditure of some $18.6 million in 1975-76.

It also said that a co-ordinated program of research related to soil conservation should be developed by the three federal departments having an interest in soil conservation (i.e. primary industry, national development and environment, housing and community development), the CSIRO and the Bureau of Agricultural Economics.

The report said the roles and functions of each federal department should be more clearly defined. This would facilitate liaison and co-ordination on soil conservation matters at all government levels including local government.

Another recommendation was that the Federal Government support the establishment of a graduate and post-graduate courses in soil conservation at an Australian university or college of advanced education.

CSO: 5000/7519

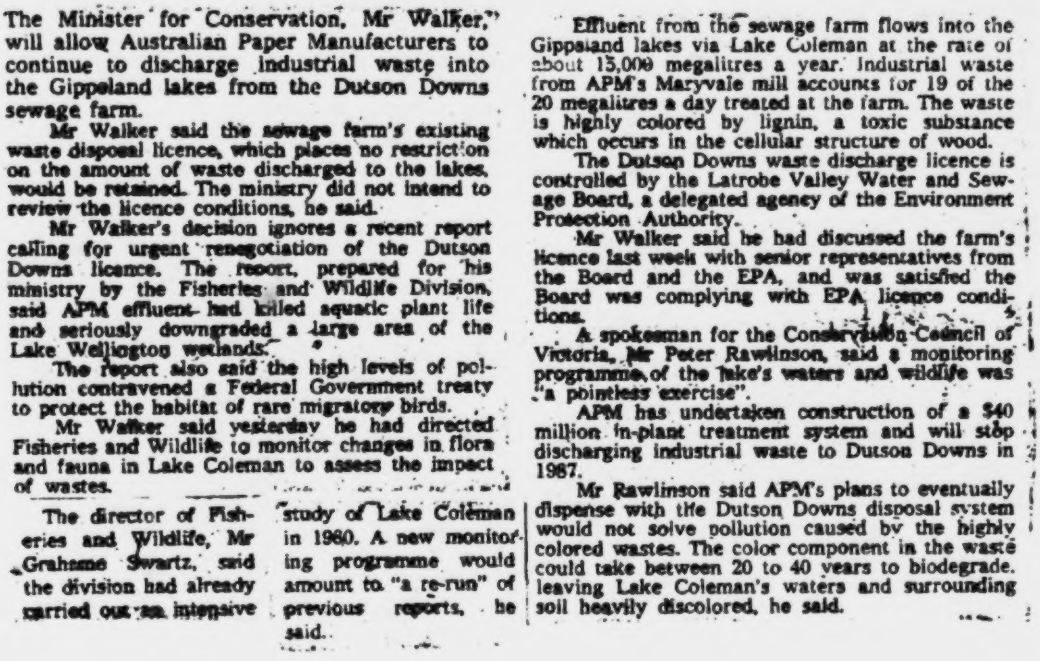
AUSTRALIA

VICTORIA MAKES CONTROVERSIAL DECISION ON INDUSTRIAL WASTE

Melbourne THE AGE in English 20 Oct 82 p 5

[Article by Rosslyn Beeby]

[Text]



The Minister for Conservation, Mr Walker, will allow Australian Paper Manufacturers to continue to discharge industrial waste into the Gippeland lakes from the Dutson Downs sewage farm.

Mr Walker said the sewage farm's existing waste disposal licence, which places no restriction on the amount of waste discharged to the lakes, would be retained. The ministry did not intend to review the licence conditions, he said.

Mr Walker's decision ignores a recent report calling for urgent renegotiation of the Dutson Downs licence. The report, prepared for his ministry by the Fisheries and Wildlife Division, said APM effluent had killed aquatic plant life and seriously downgraded a large area of the Lake Wellington wetlands.

The report also said the high levels of pollution contravened a Federal Government treaty to protect the habitat of rare migratory birds.

Mr Walker said yesterday he had directed Fisheries and Wildlife to monitor changes in flora and fauna in Lake Coleman to assess the impact of wastes.

The director of Fisheries and Wildlife, Mr Grahame Swartz, said the division had already carried out an intensive study of Lake Coleman in 1980. A new monitoring programme would amount to "a re-run" of previous reports, he said.

Effluent from the sewage farm flows into the Gippsland lakes via Lake Coleman at the rate of about 15,000 megalitres a year. Industrial waste from APM's Maryvale mill accounts for 19 of the 20 megalitres a day treated at the farm. The waste is highly colored by lignin, a toxic substance which occurs in the cellular structure of wood.

The Dutson Downs waste discharge licence is controlled by the Latrobe Valley Water and Sewage Board, a delegated agency of the Environment Protection Authority.

Mr Walker said he had discussed the farm's licence last week with senior representatives from the Board and the EPA, and was satisfied the Board was complying with EPA licence conditions.

A spokesman for the Conservation Council of Victoria, Mr Peter Rawlinson, said a monitoring programme of the lake's waters and wildlife was "a pointless exercise".

APM has undertaken construction of a $40 million in-plant treatment system and will stop discharging industrial waste to Dutson Downs in 1987.

Mr Rawlinson said APM's plans to eventually dispense with the Dutson Downs disposal system would not solve pollution caused by the highly colored wastes. The color component in the waste could take between 20 to 40 years to biodegrade, leaving Lake Coleman's waters and surrounding soil heavily discolored, he said.

CSO: 5000/7515

BOTANY BAY POLLUTED, SAID TO BE 'COLLAPSING' ECOLOGICALLY

Sydney THE SYDNEY MORNING HERALD in English 27 Oct 82 p 2

[Article by Richard Eckersley]

[Text] **Man and the sea urchin are destroying Botany Bay. Ecologically, it is collapsing, Dr Tony Larkum of Sydney University believes.**

"It's happening — we're seeing it now," he said yesterday.

He forecast that the bay's water would become muddy, its foreshores would erode. Birds, fish, prawns, shellfish, sponges and other forms of life would suffer.

Dr Larkum estimates this process of collapse will take another five years if the sea urchins are not controlled, or 10 to 20 years if they are.

The reason is the disappearance of the bay's beds of seagrass, particularly the deepwater species, Posidonia. The seagrass binds the sea floor, filters the water, and provides breeding and feeding grounds for estuarine and ocean fish.

Dr Larkum, of the university's School of Biological Sciences, has surveyed the seagrass beds under a grant from the Coastal Council of NSW, advisory body to the NSW Minister for Environment and Planning, Mr Bedford.

Dr Larkum said scientists believed that in the nineteenth century Posidonia covered 70 per cent of Botany Bay's total area of 3,800 hectares — or about 2,700 hectares. Today, 240 hectares remained — less than 10 per cent. And that was half the area which existed 12 years ago.

Dr Larkum said pollution had caused most of the damage. He believes pollutants such as heavy metals, toxic industrial chemicals and oil weaken the seagrass which can then be ripped out by wave action. Sewage and fertilisers encourage algal growth, which smothers the seagrass.

He said environmental reports had underestimated the effects of the increased wave action resulting from the dredging of the bay entrance. Seagrass beds which had been expected to act as a natural buffer and absorb this extra wave energy had instead been destroyed.

Now sea urchins, almost nonexistent in the bay two years ago, were rapidly eating their way through the remaining beds. In about a year, they had cleared an area of 10 to 12 hectares. In some places, there were 100 sea urchins to a square metre.

CSO: 5000/7514

NSW COUNCILS ASKED TO GIVE TOWN PLANNERS MORE AUTHORITY

Sydney THE SYDNEY MORNING HERALD in English 26 Oct 82 p 12

[Article by Mark Coultan]

[Text] **The Department of Environment and Planning has asked NSW councils to reduce delays for development approvals by giving more power to town planners.**

The director of the department, Mr Dick Smyth, said he had written to all councils to ask them to approve a delegation of authority to town planners which would short-cut the approval process by at least two months.

Mr Smyth said if the councils approved, he would delegate the department's authority to town planners.

Under the Environmental Planning and Assessment Act, councils must refer developments to the department to determine if an environmental study is required before a local environment plan is drawn up.

It must also determine if the local plan is consistent with State and Federal Government policies.

Mr Smyth said that only 20 to 30 per cent of the applications processed by his department required an environmental plan or were inconsistent with government policies.

If all councils agreed to the proposal, about 700 matters each year woul be processed about two months earlier.

The delegation of the department's aporoval was allowed under the Act. If legal action was taken, the department would still be responsible because the town planner would be acting as an officer of the department.

Mr Smyth said that in the case of council officers not acting in a proper manner, he could withdraw his authority at any time.

Mr Smyth's comments were made at the Local Government Association's annual conference in Goulburn, at which the retiring president of the NSW Chapter of the Royal Australian Institute of Architects, Mr Martyn Chapman, said councils were taking too long to process approvals.

Mr Chapman presented a survey which showed the cost of delaying approval for an average house was $33 a day.

Waiting for council approval added an average of about $2,200 to the cost of a house — $800 more than it should have if the council had granted approval in the required time of 40 days.

Mr Chapman said the limit of 40 days should be lowered for single houses.

The cost of delaying approval for a home unit was estimated at $23.56 per day. The total cost of waiting for council approval for a home unit varied between $4,338 and $7,235.

If an applicant had to appeal to the Land and Environment Court, a further delay of 72 days could be expected, increasing the cost of a building by $1,696, plus any legal or court costs.

Added to this was $14.38 per day, the cost of borrowing $35,000 for land at 15 per cent interest.

There were also other holding charges and rates to pay, which at 8 per cent would cost $7.67, making a total cost per day of $33.01.

The Department is waiting for replies from councils. Early indications are that most councils will agree to the delegation of authority, although some may want clear guidelines when it will apply.

Individual councillors and possibly some councils may oppose the suggestion of the grounds it takes away power from the elected aldermen and puts it in the hands of council staff.

CSO: 5000/7514

PAPER ASSESSES JOBS VS ENVIRONMENT ISSUE IN FORESTRY

Sydney THE SYDNEY MORNING HERALD in English 25 Oct 82 p 6

[Editorial: "Forest Policy"]

[Text] IN THE middle of the NSW Government's deliberations on the contentious matter of logging in the Washpool Forest, it has been confronted by a decision in the Land and Environment Court which, it has been claimed, could be used effectively to stop all logging operations in NSW. On Friday, Justice Cripps ordered that the Forestry Commission and a sawmilling company be restrained from logging in the Goonimbar State Forest until an environmental impact statement had been prepared and considered by the Forestry Commission. The secretary of the NSW Labor Council, Mr Unsworth, has predicted that the decision could lead to the loss of 1,800 jobs in the NSW timber industry. This prediction was endorsed by the executive director of the NSW Forest Products Association, Mr Jordan, who claimed that the decision could lead to the industry losing its economic viability.

At the heart of this issue is the interpretation of Section 112 of the Environmental Planning and Assessment Act which stipulates that before approval can be given for "an activity that is likely to significantly affect the environment," an environmental impact statement must be prepared, examined and considered in accordance with the Act. In the present case, the judge found that the proposed logging operation would significantly affect the environment. The industry fears that most logging operations could be similarly held to be environmentally significant and that environmental impact statements would need to be prepared before establishing any logging road. Since several hundred roads or trails are built or extended each month, this would impose a serious financial burden on the industry.

The court's decision did not come as a surprise. Earlier this year the Minister for Forests, Mr Gordon, argued that the Act provided no definition of "significance" and defined "activity" so that the word embraced nearly everything planned or undertaken. He pointed out that, while the Forestry Commission held the view that forestry operations are generally not "significant" in the sense of the Act, "it is possible that ultimately the Land and Environment Court may determine otherwise." That possibility has now become fact.

Justice Cripps acknowledged in his decision that the Act defines "environment" and "activity" in the widest possible terms. He noted also that the test in Section 112 tends to beg the question. "How can a decision be made whether to require an environmental impact statement until it is known how significant the impact of the activity will be?" The manner in which the judge answered that question in this case is obviously grounds for concern for the timber industry. Few would dispute that for major proposals, such as Washpool and the Hastings Valley, an environmental impact statement should be prepared. But what about cases where logging has already occurred or where the proportion of rainforest is small?

If the consequences of the court's decision are as serious as predicted by the Forest Products Association and the Labor Council, what should be the appropriate response by the Government? One, which is favoured by the industry and the Forestry Commission, is to exclude forest operations from the Act. This has also been suggested by the Ombudsman who has expressed concern about the time that can be taken in making decisions on forestry matters. But this is a step which would cause public disquiet. The Forestry Commission has done little to establish public confidence that it would administer such responsibilities in a sensitive manner.

The best course for the Government would be to establish an overall rainforests policy which would enable the industry properly to plan its future. It would also assure conservationists (and this term includes many more than the "Volvo set" derided by Mr Unsworth) that our rainforests will be preserved for the appreciation and enjoyment of future generations. That is what the public is expecting from the Government when it makes its decision on Washpool this week.

CSO: 5000/7519

CHARGE OF FALSE FOREST PROTECTION CLAIMS IN QUEENSLAND

Brisbane THE COURIER-MAIL in English 1 Nov 82 p 12

[Article by Bill Ord]

[Text] Three conservation groups and the Labor Party have accused the Premier, Mr Bjelke-Petersen, and the National Parks Minister, Mr Elliott, of making false and misleading statements about the protection of Queensland rainforests.

A Queensland Conservation Council project officer, Mr Grahame Wells, said: "Me Bjelke-Petersen said last week that his Government had protected more than a million hectares of rainforest. Mr Elliott claimed that all rainforest north of Mackay was protected. Both claims are wrong.

"Less than one-quarter of our rainforests has been put into national parks. When will the rest get that protection?"

The Australian Conservation Foundation rainforest co-ordinator, Mr David Allworth, said: "I look forward to the day when the Premier's statement is correct."

The Queensland Rainforest Protection Society secretary, Dr Aila Keto, said: "Only about 223,000 ha of our rainforest has national park protection, the only protection worth having.

"Most of the rest is under the control of the Lands and Forestry Department, which still has wide powers to log or alienate the land. This is hardly the totally protected status people want for rainforests."

The Opposition Leader, Mr Wright, said: "The Premier's 'protection' amounts to no more than putting a meal aside for later consumption."

CSO: 5000/7513

AUSTRALIA

PORT KEMBLA SMELTER PUTTING EXCESSIVE LEAD IN AIR

Sydney THE SYDNEY MORNING HERALD in English 19 Oct 82 p 12

[Article by Richard Eckersley]

[Text] Levels of lead in the air near a smelter in Port Kembla far exceeded the safe air quality standard, according to a report released yesterday.

At one monitoring site, air lead levels reached 10 times the standard.

However, a survey of 398 school children in the area showed that all had blood lead levels within limits set by health authorities.

The blood and air lead levels are reported in a paper in the latest issue of the Medical Journal of Australia. The authors are Dr Ignatius Gan and Dr Gary Schier, respectively director and deputy director of Wollongong Hospital's biochemistry department and Dr Cyril Innis, assistant regional director of the NSW health Commission. Illawarra Region.

The National Health and Medical Research Council has recommended, and the NSW Government has adopted, a maximum air lead level of 1.5 micrograms per cubic metre, averaged over three months.

Readings at three sites near the Electrolytic Refining and Smleting smelter between 1978 and June, 1981, showed that: at Port Kembla Fire Station, about 400 metres from the smelter, average readings over three consecutive months ranged from 1.73 micrograms to 15.93 micrograms; at St Patrick's School, about 800 metres away, they ranged from 0.74 to 3.68; and at the Port Kembla substation about 2 km away, they ranged from 0.38 to 0.66.

But there was no evidence of an increase in children's blood lead levels, which were comparable with those recorded elsewhere.

The authors suggest this might be because the lead from the smelter was mainly in the form of insoluble inorganic lead compounds. These particles might be breathed into the lungs, but little or nothing would be leached into body fluids and hence contribute to blood lead levels.

The conclude: "Because of the serious toxic effects of lead on human health, and the unknown long-term effects of insoluable lead particulates on health, it is recommended that, for the present, companies with smelting operations should abide by the current lead air quality standard."

ERS is working with the NSW State Pollution Control Commission on a program to reduce lead emissions from the smelter.

The company's general manager, Mr Ken Parkes, said yesterday the company had spent about $1 million over the past two and a half years to cut pollution, particularly by lead, and air lead levels were dropping.

CSO: 5000/7514

WEST AUSTRALIA ACTS ON TITANIUM PLANT EFFLUENT IN LAPORTE

Perth THE WEST AUSTRALIAN in English 27 Oct 82 p 28

[Text]

THE State Government will buy 316 hectares of extra waste-disposal space as the first step in implementing the recommendations of a long-awaited report on effluent disposal from the Laporte titanium plant.

The freehold land is on the Leschenault Peninsula immediately north of the area where the effluent—acid, sulphates, iron and other metals in solution—is pumped into lagoons.

The report of the Laporte effluent disposal committee, representing about 10 years of study and more than $500,000 spending by the Government and Laporte Australia Ltd, was tabled in State Parliament yesterday.

It gives the Government and factory owners a set of options and recommendations on the long-term handling of effluent, aiming to avoid pollution in Leschenault Inlet and minimising it elsewhere.

The set of five recommendations has been accepted by the Government.

It also accepts two important conclusions by the committee: That the effluent should be split before disposal; and that at some stage it will have to be discharged into the ocean through a pipeline.

Discharge

The committee concluded that the options with least damage to the environment all involve ocean discharge combined with onshore disposal of part of the effluent.

It recommends:

- The start of detailed studies for a marine pipeline with the aim of discharging some of the effluent into the ocean as soon as possible.
- Obtaining the 316 hectares north of the existing disposal area immediately.
- Detailed studies on splitting the effluent into streams.
- Continued field testing to confirm the feasibility of injecting concentrated effluent in bores into the limestone layer underlying the peninsula.
- More study on the visual pollution caused by iron effluent, which above a certain concentration stains sea water red.

The Government will amend the Laporte Agreement Act to clear the way for buying the land.

It had already commissioned engineering consultants Binnie and Partners to examine the best location, materials and size for an off-shore effluent pipeline.

"The committee has concluded that the most acceptable method of treatment and disposal of effluent, environmentally and economically, was on the sand dunes currently used next to the foreshore," the Minister for Resources, Mr Jones, said.

"However, the area of suitable sands is limited and in the near future other means of disposal will be required."

The Government has accepted that it is necessary to split the effluent into a weak and a strong stream.

The weak stream would have 75 per cent of total effluent volume but only five per cent of the iron and 10 per cent of the acid. The strong stream would contain 95 per cent of the iron and 90 per cent of the acid.

If promising results already given by the bore injection method are borne out by further studies, the strong effluent will be disposed of in the limestone layer. The limestone neutralises the acid and the iron is "fixed" in the sand of the dune area.

However, the committee found that, whatever the methods used, the capacity of the peninsula to absorb land disposal will be exhausted by some time after the year 2000.

The Government is looking to the extra 316 hectares of disposal area to give it about 20 years' grace for land disposal from about 1987.

Mr Jones said that the earliest possible date for ocean discharge to start would be 1986.

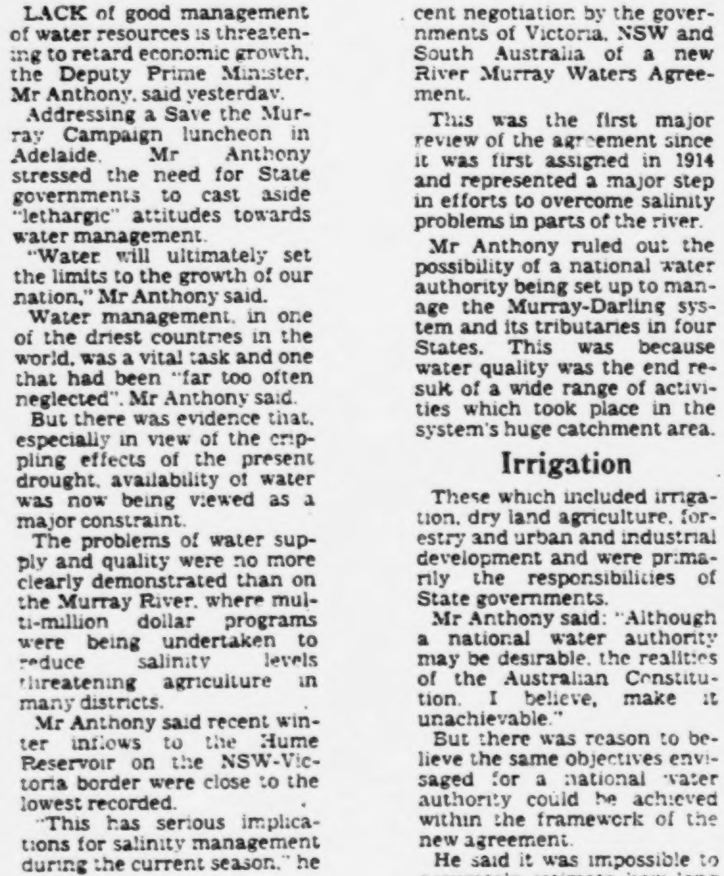
The committee ruled out barging effluent from the factory to the edge of the continental shelf 90km away as being uneconomical. It also found that chemical neutralisation of the effluent on land was not a practical method with the options available today.

CSO: 5000/7518

POOR WATER RESOURCE MANAGEMENT BAR TO ECONOMIC GROWTH

Canberra THE AUSTRALIAN in English 5 Nov 82 p 3

[Article by John Stanton]



[Text] **LACK** of good management of water resources is threatening to retard economic growth, the Deputy Prime Minister, Mr Anthony, said yesterday.

Addressing a Save the Murray Campaign luncheon in Adelaide, Mr Anthony stressed the need for State governments to cast aside "lethargic" attitudes towards water management.

"Water will ultimately set the limits to the growth of our nation," Mr Anthony said.

Water management, in one of the driest countries in the world, was a vital task and one that had been "far too often neglected", Mr Anthony said.

But there was evidence that, especially in view of the crippling effects of the present drought, availability of water was now being viewed as a major constraint.

The problems of water supply and quality were no more clearly demonstrated than on the Murray River, where multi-million dollar programs were being undertaken to reduce salinity levels threatening agriculture in many districts.

Mr Anthony said recent winter inflows to the Hume Reservoir on the NSW-Victoria border were close to the lowest recorded.

"This has serious implications for salinity management during the current season," he said.

Mr Anthony praised the recent negotiation by the governments of Victoria, NSW and South Australia of a new River Murray Waters Agreement.

This was the first major review of the agreement since it was first assigned in 1914 and represented a major step in efforts to overcome salinity problems in parts of the river.

Mr Anthony ruled out the possibility of a national water authority being set up to manage the Murray-Darling system and its tributaries in four States. This was because water quality was the end result of a wide range of activities which took place in the system's huge catchment area.

Irrigation

These which included irrigation, dry land agriculture, forestry and urban and industrial development and were primarily the responsibilities of State governments.

Mr Anthony said: "Although a national water authority may be desirable, the realities of the Australian Constitution, I believe, make it unachievable."

But there was reason to believe the same objectives envisaged for a national water authority could be achieved within the framework of the new agreement.

He said it was impossible to accurately estimate how long it would take the rural sector to recover from the drought, once it broke.

CSO: 5000/7520

RIVER AUTHORITY IN WA ATTACKS SEPTIC WASTE DUMPING

Perth THE WEST AUSTRALIAN in English 5 Nov 82 p 17

[Text]

THE illegal dumping of septic waste into stormwater drains on the Swan and Canning Rivers is worrying the Swan River Management Authority.

In the Waterways Commissioner's annual report tabled in State Parliament yesterday, the authority said that in the past financial year a number of workshops had discharged effluent into the drains.

The effluent had contained petrochemicals and other pollutants. Fifteen cases, where no licence was issued for the discharge of treated effluent, had been investigated and stopped.

Copper

The report also expressed concern at the input of chromium, copper and zinc into the Swan River Estuary and the low tidal reaches of the Murray River.

Other sections dealt with the Peel Inlet Management Authority and the Leschenault Management Authority.

The Minister for Conservation and Environment, Mr Laurance, yesterday detailed amendments to the Waterways Commission Act to bring canals under the control of management authorities.

He told the Legislative Assembly that the Peel Inlet authority did not have jurisdiction over two canals which had been constructed adjacent to the authority's waterways.

The amendment was in line with recommendations for the development of canal estates adopted by the State Cabinet in August last year.

By laws were proposed so that the Swan River Management Authority could stop vessels disposing sewage directly into the river.

The Government had installed pump-out facilities at the Barrack Street jetty but vessel operators were not obliged to use the equipment.

Under current legislation it could be difficult for the authority to prove that a vessel had disposed of sewage directly into the river, Mr Laurance said.

The debate was adjourned.

CSO: 5000/7520

BRIEFS

STATE FOREST ISSUE--Pomona.--Conservationists will hold a funeral service here next Sunday for the Yurol and Ringtail State Forests. The two forests, which occupy a total of 3400 ha of mainly native bush, are between Pomona and Lake Cootharaba. More than half the bush has been condemned by the Forestry Department which has decided to clearfell and burn it to make way for plantings of exotic pines. On Sunday hundreds of conservationists will watch Mr Bill Hollis' bullock team haul a felled native tree, draped in black, out of the Yurol forest and back to Pomona where the last rites will be held. The cortege will be piped there by the Gympie Caledonian Band. Mourners will include members of the Cooloola Region Forests and Parks Association, the Noosa Shire Council, the Australian Littoral Society and the Noosa Parks Association, all of which have pleaded unsuccessfully with the Lands Minister, Mr Glasson, to reverse his department's decision. "We don't want them to be planted in some foreign trees that wouldn't give a feed to a sick bandicoot or a moulting parrot." The conservationists' leader, Mr Tos Barnett, farmer, lawyer, Noosa Shire councillor and former constitutional adviser to the Papua New Guinea Government, said yesterday: "We don't mind the forests being logged for normal commercial purposes. We don't want them destroyed for the sake of planting exotic softwoods that are going to be a drug on the market in 20 years. [By Bill Ord] [Text] [Brisbane THE COURIER-MAIL in English 19 Oct 82 p 10]

WA SALINITY--WA is by far the worst-affected State for farmland salinity, according to a national report. This State has 264,000 hectares of agricultural land affected, while Victoria has 90,000 and South Australia 55,000. It is estimated that 4.2 million ha of Australia has been affected by salt since settlement, with 90 per cent of the area being salt scalded pastoral country. The report is for the committee on soil conservation. It is the first attempt to look at salinity on an Australian basis and will be used as a guide for State and Federal Government action. In agricultural areas, it is estimated that there has been a fall in farm capital value of $135 million, with an annual decline in productivity of $16 million. By the year 2000, the decline in capital value will reach $220 million. The report says there is a need to define more closely the effect of current land use on ground-water salinity and the relationship of soil, land use and salt in agricultural areas. It recommends methods of accurately assessing salt-land areas, instead of relying on farmer memory, and the identification in WA particularly of recharge areas--where water has not been used by plants and causes build-up in ground water at lower land levels. The report also called for investigation of the varieties of plants to increase water use. [Text] [Perth THE WEST AUSTRALIAN in English 21 Oct 82 p 32]

EPA ON CANAL PROJECT--Mandurah conservationists have welcomed the Environmental Protection Authority's thumbsdown on the proposed Sun Land canal project at South Yunderup. The EPA has reported to the WA Government that the project is environmentally unacceptable because of its effects on water quality. The authority says that the lower reaches of the Murray and Serpentine Rivers are unsuitable for canal developments. The president of the Peel-Preston Preservation Group, Mr Len Howard, said that the EPA's findings were in line with submissions from his groups opposing canal developments. "We hope that the huge canal-type developments planned for the Mandurah channel entrance get similar recommendations from the EPA," he said. Mr Howard said that further development of fragile wetland areas should be delayed at least till a State or national conservation strategy was completed. [Text] [Perth THE WEST AUSTRALIAN in English 26 Oct 82 p 20]

CSO: 5000/7515

ENERGY MINISTER OPENS ENVIRONMENTAL WORKSHOP

Dhaka THE BANGLADESH TIMES in English 2 Nov 82 pp 1, 8

[Text]

Air-Vice Marshal Sultan Mahmud, DCMLA and Minister for Energy on Monday urged mediamen to make people aware of the need to keep the environment pollution-free.

Inaugurating a 5-day workshop on "Environmental reporting" the DCMLA said the government efforts in this regard would not suffice, for in a third world country like Bangladesh, ignorance of the people was responsible for environmental hazards to a great extent.

The 5-day workshop has been jointly sponsored by the Economic and Social Commission for Asia and the Pacific (ESCAP) and The Press Institute of Bangladesh. Seventeen reporters from newspapers, radio and television are participating in it.

Presided over by PIB Chairman Mr Abdul Wahab, the inaugural function was also addressed by Information Secretary Mr A. B. M. Ghulam Mostafa and Dr Kazi F. Jalal, Chief of the Environmental Coordinating Unit, office of the Executive Secretary, ESCAP.

Air Vice Martial Sultan Mahmud said environment was being polluted at an alarming pace at a time when human civilization and progress at its peak. The problem was becoming acute in the developing country too, he said.

He said that poverty was not the only factor that led to the problem of environmental pollution in the developing countries. There was a lack of awareness about it. High rate of population growth, inadequate employment opportunities were other factors. Bangladesh population is estimated to reach 20 crore mark by the next century, and it could be easily understood what dangerous impact would there be on the environment if we were not cautious right now, the DCMLA said.

Listing the factors like newer scientific experiments, smokes from chimneys of factories, careless use of louder horns by auto-vehicle drivers, unscientific waste disposal, salinity which interfered with the environment and shattered ecological balance, the DCMLA called for united efforts to find out ways for protecting the natural atmosphere.

The DCMLA said that Bangladesh with its limited resources was continuing efforts to get rid of the problem of environmental pollution. The environmental pollution board had been established, and the "Forest Act" had been passed to protect the forest resources, and to continue afforestation.

Mr. A. B. M. Ghulam Mostafa said that unplanned use of limited natural resources shattered the ecological balance. Time had come that we should pay adequate attention to protect the environment, he said.

The Information Secretary emphasised the need for general awareness among the people for the purpose, and said that the mass media could utilise their resources to bring about such awareness.

He hoped that the participants at the workshop would enormously benefit from the 5-day deliberations, and engage themselves in efficient environmental reporting.

Earlier, in his keynote address Dr. Kazi F. Jalal explained the various aspects of the concern for environment and said that the major environmental problems in the ESCAP region were deforestation, desertification and damage to the aquatic environment that were continuing at unprecedented rates at recent times.

In his presidential address PIB Chairman, Mr. Abdul Wahab said that before going for protecting the environment we should know and love it. He said that the developing countries could learn from the bad effects of unplanned urbanisation and industrialisation in the developed countries.

Emphasising the need for a total approach in this regard the PIB Chairman pointed out that if deforestation was to be avoided, the vast majority of the people who depended on cheap fuel wood for energy should be provided with alternative cheaper energy.

CSO: 5000/7012

GANGES DIVERSION ENDANGERS BANGLADESH ECOLOGY

Dhaka HOLIDAY in English 7 Nov 82 p 3

[Text]

Hilsa, the most delicious as well as the most commercially exploited fish of Bangladesh is now facing gradual extinction due to the upstream diversion of the Ganges water to India.

A recent study carried out by experts on the effect of the unilateral withdrawal of the Ganges water on the fishery of Bangladesh revealed that Hilsa, which must ascend the river Ganges and its tributaries in the Monsoon (June to September) for breeding purposes is worst hit.

In the absence of hydrological factors that used to stimulate spawing migration, the spawing population is not ascending the river Ganges in the same extent and in the number as in the past.

Similarly, the winter migration of Hilsa, which is mainly for the purpose of grazing has also undergone drastic change due to ecological disruption caused by the lesser discharge of water and lesser amount of sediment in the water.

These changes have resulted in lesser production of Hilsa which is evident from the decline in the landing of the species at Chittagong Chandpur, Comilla and four railway stations in Faridpur.

It is learnt that the change in the water regime in the lower reaches of the Ganges has substantially disrupted the ecology of water influencing feeding, reproduction, spawing behavior of various fish and prawn population living in the gangetig water system below the Farakka barrage.

It may be mentioned here that a decline trend has been observed to catch Hilsa fish in one-time famous Minkur-Jafarabad fishery in the Ganges at Rajshahi district. An extremely low quantity of hilsa is being caught there during July to September when the Padma receives sufficient flood water from upstream and surrounding catchment areas.

A part of Sundarbans, where a substantial quantity of hilsa fish used to be caught, because of the nutrients carried by the Ganges and its tributaries and by the cross current of sea, has also been severely hit by the withdrawal of the Ganges water.

The hydrological and and hydrobiological changes caused by the Farakka barrage has not only affected the Hilsa fishery but also all other species of fish and prawns inhabiting the Ganges water system that flows through Bangladesh.

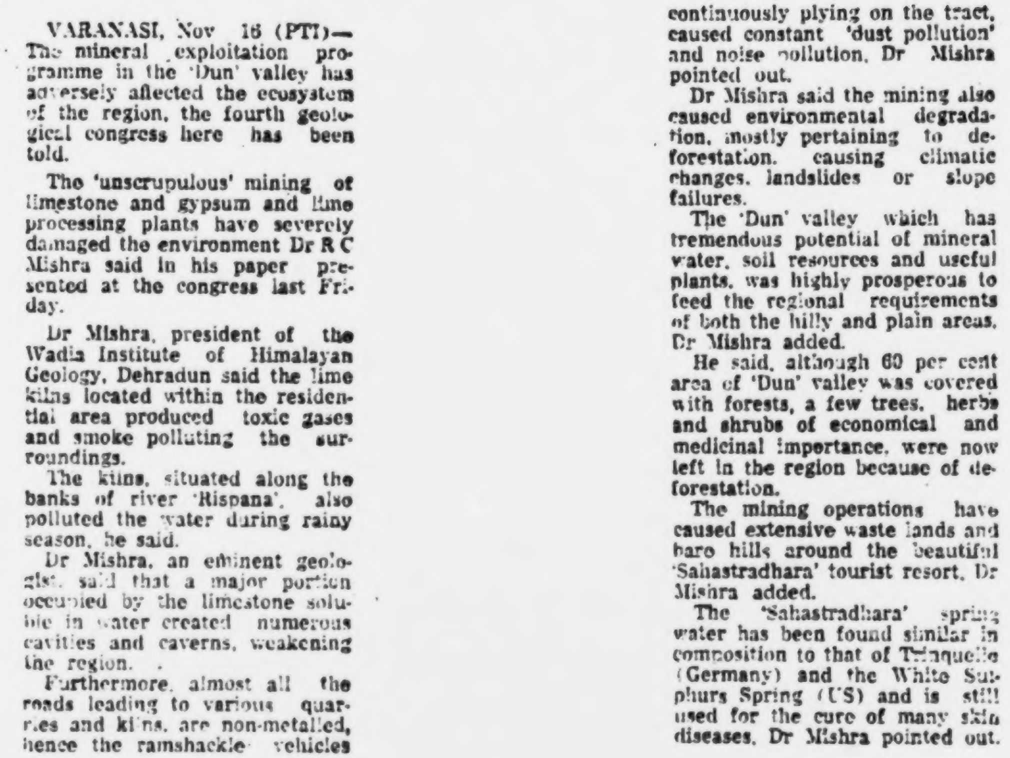
It may be recalled here that the Gangetic water system in Bangladesh supports population of over 200 species of fresh water fish and 18 species of prawns.

CSO: 5000/7013

EFFECTS OF MINERAL EXPLOITATION ON ECOSYSTEM NOTED

New Delhi PATRIOT in English 17 Nov 82 p 5

[Text]



VARANASI, Nov 16 (PTI)—The mineral exploitation programme in the 'Dun' valley has adversely affected the ecosystem of the region, the fourth geological congress here has been told.

The 'unscrupulous' mining of limestone and gypsum and lime processing plants have severely damaged the environment Dr R C Mishra said in his paper presented at the congress last Friday.

Dr Mishra, president of the Wadia Institute of Himalayan Geology, Dehradun said the lime kilns located within the residential area produced toxic gases and smoke polluting the surroundings.

The kilns, situated along the banks of river 'Rispana', also polluted the water during rainy season, he said.

Dr Mishra, an eminent geologist, said that a major portion occupied by the limestone soluble in water created numerous cavities and caverns, weakening the region.

Furthermore, almost all the roads leading to various quarries and kilns, are non-metalled, hence the ramshackle vehicles continuously plying on the tract, caused constant 'dust pollution' and noise pollution, Dr Mishra pointed out.

Dr Mishra said the mining also caused environmental degradation, mostly pertaining to deforestation, causing climatic changes, landslides or slope failures.

The 'Dun' valley which has tremendous potential of mineral water, soil resources and useful plants, was highly prosperous to feed the regional requirements of both the hilly and plain areas, Dr Mishra added.

He said, although 60 per cent area of 'Dun' valley was covered with forests, a few trees, herbs and shrubs of economical and medicinal importance, were now left in the region because of deforestation.

The mining operations have caused extensive waste lands and bare hills around the beautiful 'Sahastradhara' tourist resort, Dr Mishra added.

The 'Sahastradhara' spring water has been found similar in composition to that of Trinquelle (Germany) and the White Sulphurs Spring (US) and is still used for the cure of many skin diseases, Dr Mishra pointed out.

CSO: 5000/7011

ENVIRONMENT MINISTRY PROPOSED TO REPLACE COMMISSION

Wellington THE EVENING POST in English 29 Oct 82 p 3

[Text] **A ministry for the environment and a commercial forestry commission are among solutions to a "confused" and "fragmented" environmental management proposed by a coalition of conservation and outdoor recreation groups.**

"Environmental Management in New Zealand: A Strategy" urges the Government to implement many of the recommendations of the Organisation for Economic Co-operation and Development's 1981 report on New Zealand environmental policies.

Despite the depth of this review, public submissions and a subsequent review by the Government-appointed Environmental Council, the Government had failed to implement any of the proposals according to the strategy released in Wellington last night.

Prepared by the Royal Forest and Bird Protection Society, Federated Mountain Clubs, the Native Forests Action Council, Environmental Defence Society and environment and conservation organisations, it stresses the importance of strong environmental management as the pace of development increases.

A ministry for the environment would replace the Commission for the Environment and absorb the environmental functions of other departments such as the Ministry of Works and Development's water and soil division, town and country planning and the maritime planning division of the Ministry of Transport.

The strategy also seeks a nature conservancy incorporating the wildlife service and with responsibility for the natural lands of the Crown.

A forestry commission would be divorced from the other two agencies and administer commercial exotic forestry.

The Environmental Defence Society spokesman, Mr Gary Taylor, told the "Post" that commercial forestry must be separated from conservation before the present forests/lands merger was implemented.

The strengthening of the independent public interest and advisory roles of the Nature Conservation Council and Environmental Council is advocated as is the appointment of an ombudsman-like auditor of environmental impact reports.

The National Parks and Reserves Authority should also be retained and not compromised by amalgamation with groups responsible for commercial production, as in the proposed lands/forests merger.

Government submissions to the Environmental Council review of the OECD report had admitted environmental management was "fragmented" and "confused," said the strategy.

"There is a clear and urgent need for substantial reform of the system to ensure the largely unspoiled environment we can still enjoy in New Zealand is not further degraded.

"There are growing signs that the machinery of the Government is unable to meet the demands of the eighties," the strategy said.

CSO: 5000/9083

BEACH EROSION POSES THREAT TO TOURIST INDUSTRY

West Coast Situation

Bridgetown ADVOCATE-NEWS in English 5 Nov 82 p 1

[Text] Hoteliers along Barbados' west and south coasts, fighting for survival as a result of the international recession and its consequential fall-off in visitor arrivals, now have to deal with a renewed problem--beach erosion.

The beaches have been one of the island's main selling points for decades but a number of factors are slowly arising--not least among them erection of groynes--to threaten further existence of "long, white sandy beaches."

Only last Tuesday beach erosion brought down two manchineel trees on the property of St James Beach Hotel, caused massive loss of life to small fish and crustacean in the area.

According to manager of the hotel, Mr Mikhail Shamkin, one of the trees fell about 4 p.m. on Tuesday while the other succumbed about 10 p.m. the same day.

He said the hotel had applied for planning permission to build a retaining wall some time ago but was still awaiting word from the authorities.

Mr Shamkin also pointed out that during the 14 months the property had been standig, no less than 24 ft of beach land had been eroded and he was very fearful of losing another 10 trees--which had the majority of their roots exposed--when the upcoming rough November tides lashed his beach front.

Up to late yesterday afternoon scores of sea urchins and small fish could still be seen dotting the small areas of sand which was left as the tide receded.

At first it was thought that the fish may have been dynamited but later two Paynes Bay fishermen, Aubrey Fenty and Kenneth Alleyne ruled this out saying that they were poisoned by the machineel.

The fishermen, with more than 40 years experience behind them, related that in their younger days they often used manchineel to blind fish so that they were easily caught.

A check with Bellairs Research Institute of McGill University verified that manchineel could adversely affect sea life. The Institute also sent two researchers, Heather Kaye and Mitch Sisak to investigate and collect water samples.

Later at the Institute, Director Dr Wayne Hunte explained that hydrochloric acid from the manchineel resulted in an increase in acidity in the immediate vicinity of the fallen trees, and that this reduced acidity would be particularly toxic to those organisms with limited mobility such as sea urchins, benthic in-shore fish and smaller fish and crustacean species.

Observations from the fishermen and the researchers on the spot verified that these were the species that suffered heaviest mortality.

Analysis of the water samples taken about 12 hours after the incident showe that acidity values had already returned to near normal, presumably because of the flushing effects of the tides.

During this time of year several hotels along the west and south coasts usually lose several feet of their beach front and some have sought to arrest this problem by building groynes.

But botanists and geologists feel that the indiscriminate building of groynes only served to pass the problem from one property to another further north or south of where the groyne is built.

Slam at Property Owners

Bridgetown THE NATION in English 9 Nov 82 p 20

[Text] Many of the hoteliers and private property owners along Barbados' plush west coast are responsible for or have contributed to much of the beach erosion with which they are now faced.

So said Minister of Housing and Lands, Delisle Bradshaw, while responding to yesterday's NATION report that many private property owners and hoteliers were losing thousands of dollars as a result of beach erosion.

Bradshaw claimed that some West Coast hotels had tampered with the reef there while others had failed to monitor the groyne which they received permission to construct.

The minister pointed out that he had only recently visited the west coast, along with officials from his ministry, the Chief Town Planner, the chairman and officials from the Ministry of Transport and Works (MTW) and special consultant, Dr Gill Cambers, and had seen all the properties involved.

He added that he had solicited the view and recommendations of the consultants and had talked to nearly all the property owners who had requested permission to put down boulders or gabions to protect their properties.

He pointed out that at the time he made it clear that before permission was granted the request would have to be studied so that the problem could be remedied once and for all.

Bradshaw said: "It was discovered that some of these very people have illegally built too near the beach, contrary to the advice of the Chief Town Planner and, secondly, they have without any permission, put down boulders in an effort to protect their properties. These structures have added to their own problems and have caused problems to adjacent properties."

He noted that his ministry had not refused to grant permission, but, in the light of an Inter-American Development Bank study to be conducted early next year, it had to take into consideration the implications of all reports and recommendations which could come from the study.

The minister added: "The ministry is presently considering staff proposals as a prerequisite for the start of the study which should be early in the new year."

He added that in the meantime, officials at Golden Palm had been told to remove part of their groyne so that some of the sand accumulated to the north would filter south of the structure creating beach. He said this would make it a "permeable groyne."

Bradshaw concluded: "I am appealing to all hoteliers and property owners to wait until proper recommendations and advice are given so we can plan an orderly correction of the situation."

Residents' Response

Bridgetown THE NATION in English 12 Nov 82 p 32

[Text] Private property owners along the St James coast of Barbados have responded to statements by the Minister of Housing and Lands by saying that they were forced to drop boulders in the sea to protect their properties.

Minister Delisle Bradshaw said last Monday that a number of property owners had illegally dumped boulders into the sea and were responsible for, or contributed to much of the erosion now taking place there.

The owners, however, said they had sought permission from the Town and Country Planning Department to put boulders in the sea in front of their properties when the beach erosion escalated, but they had been refused.

The property owners blamed the erosion on the construction of a groyne below Sunset Crest and not on their putting boulders in the sea.

Bradshaw on Monday said that the hotel which had constructed this groyne had failed to monitor it as had been stipulated. He said that as a result the hotel had been ordered to open a section of the groyne so that the build-up of sand could flow southward in its natural pattern, restoring some of the lost beach.

CSO: 5000/7516

BRIEFS

COASTLINE EROSION--Experts say the geology of Tobago suggests that the island is tilting gradually from northwest to southeast add there is a noticeable increase in erosion along the southeastern coastline to support that view. One of the projects now being considered to save the coastline is the construction of a promenade along Milford Road from Orange Hill Junction to West of Jubilee Bridge near Red Rock Bar. Apart from providing coastal protection, other benefits from the promenade will include: A lift in elevation of the road to help in drainage; a bigger carriageway; Provision of more car parking facilities along the road to enhance the commercial outlook; Provision of relaxing benches, the area, trees and lighting. The promenade design has already been prepared and according to a reliable source the project should start early next year if funds are approved. [Text] [Port-of-Spain TRINIDAD GUARDIAN in English 16 Nov 82 p 6]

CSO: 5000/7517

BRIEFS

ANTI-TSETSE SPRAYING--Maun--Anti-tsetse fly spraying in Botswana's Okavango Swamps has reached such an advanced stage that ecologists fear the swamps may be reduced to a desert in 20 years. Two more dangers--the possibility of cattle grazing in the delta when the fly has been eradicated and increased demands on the delta's water for development purposes--may accelerate the destruction, conservationists fear. Botswana government officials have denied claims that the two chemical used to kill the fly are slowly poisoning the swamps. "We are killing fish in limited numbers but it looks like less than one percent. There is no permanent environmental damage," said Dr Jeff Bowles, head of the Tsetse Fly Control Division in Maun. He estimated the fly could be wiped out in the delta in two to three years. His claims were disputed by a leading Botswana conservationist who said: "Significant numbers of fish are dying." [Text] [Johannesburg THE STAR in English 15 Nov 82 p 1]

CSO: 5000/50

GERMAN GOVERNMENT TO REHABILITATE MONROVIA SEWAGE LINES

Monrovia DAILY OBSERVER in English 11 Nov 82 p 2

[Excerpt]

The management of the Liberia Water and Sewer Corporation (LWSC) has disclosed that all sewage lines in the Monrovia area would be rehabilitated very shortly.

Over the years, sewage systems in the capital and suburbs like New Krutown, Paynesville and Logan Town have not adequately served their purpose well because of misuse and old age.

In an interview Tuesday, the new Managing Director of the LWSC, Mr. Francis F. Broh, revealed that his corporation has concluded a $3.4 million agreement with the German government to alleviate the situation.

When the project, expected to start during the dry season, is completed, Mr. Broh said, inhabitants of the areas mentioned would be able to enjoy good sanitary facilities.

"The money is available and we are only waiting for the appropriate time to begin, Mr. Broh said.

The Water and Sewer boss blamed the deplorable condition of sewage systems in the country on a number of factors, including the unauthorized connection of sanitary sewage to ordinary drainage systems.

He explained that some people are in the habit of joining both lines, thereby making it very difficult for the LWSC to locate them and have them reactivated.

Mr. Broh also blamed individuals who dump waste materials and bodies in sewage systems for being responsible for the unwholesome condition of sewage lines in the country.

He noted that his corporation will do everything to ensure that sanitary and drainage systems are separated from each other and that individuals desist from using cloths and other hard materials in the sewage lines.

CSO: 5000/46

BRIEFS

DROUGHT 'CROPS' PARK ANIMALS--Many animals died at Mlilwane and Hlane Game Parks during the recent drought. But fortunately the parks were already overstocked and the overall effect was that of a "weeding out" process, warden Ted Reilly told The Times yesterday. Despite this, he said, Hlane was still overpopulated and he suggested that the best way to solve the problem as to "sell the meat to the public." Many of the surviving animals were very thin and weak, he said. Mr Reilly said Mlilwane had about 1,000 animals and Hlane more than 10,000 but the drought had reduced the numbers considerably. He added that Hlane in particular had been overstocked and that the drought had helped solve the problem. "The drought has been a good selective factor and has helped sort out the weak from the strong ones," said Mr Reilly. Mr Reilly condemned the increase in poaching in the country. "Poaching is never selective and people shoot anything they see," he said. He suggested that the anti-poaching laws were too old, having been made more than 30 years ago. "While they were good for that time they are not good for the present increasing number of poachers," he said. The drought did have one positive effect--for tourists visiting the reserves. The drought had dried up all the waterholes and the animals had to come to one collective spot to drink. [Text] [Mbabane THE TIMES OF SWAZILAND in English 17 Nov 82 pp 1, 16]

CSO: 5000/48

EXTENT OF DROUGHT DAMAGE ESTIMATED

Harare THE HERALD in English 19 Nov 82 p 14

[Text]

THE Ministry of Agriculture has estimated that last season's drought could have claimed communal livestock worth more than $30 million.

Minister Norman said this in Harare last Friday while presenting prizes for the National Breeder and Carcase Competition held during the past show circuit.

The toll indicated that the Cattle Rescue Operation mounted to avoid the loss had not had the full desired results.

Senator Norman said the tragic drought had shown communal stocking rates to be too high and the need for reduction through sales. Efforts would now have to be made to replace the loss.

Thanking the 36 breeders who had taken part in the competition, Senator Norman called on show societies to help communal farmers improve their livestock quality by introducing competitions or classes specifically for them.

SUGGESTIONS

In the event of the exercise taking off, the Cold Storage Commission could set aside half its total show sponsorship for such competitions.

It could also be the case that shows could be introduced in communal areas where there was enough interest.

"Suggestions and ideas in this regard will be most welcome from both the societies and the National Farmers' Association of Zimbabwe," said the senator.

He presented the CSC floating trophy and $1 000 to Marondera farmer Robin McIntosh who scooped the top prize in the breeder competition.

A tie in the second place resulted in the Irvine Day Old Chicks firm of Harare equally sharing the $500 prize with Mr George Moorcroft, of Mberengwa.

In the carcass competition, $1 000 for the champion group carcasses went to Mr D. O'Donovan, of Komani Estates, together with the Reg Calmeyer Perpetual Silver Salver.

The outgoing CSC general manager, Mr Don Collen, said although entries had been a little disappointing, the quality had been exceptional

While a firm basis had been set for better future competitions, Mr Collen added: "We shall have to produce heavier and younger beef from the commercial sector while encouraging and increasing the offtake from the communal herd to ensure enough beef for both the local market and the lucrative European Economic Community market."

At each of the large-scale commercial agricultural show where the national breeder competition would be held, the commission offers $250 for the winner, and $100 for the runner-up of an entry of six steers and five heifers or cows.

CHANGES

The producer of the overall national best group of steers and heifers receives $1 000 and the runner-up $500.

Meanwhile, changes to the $5 250 breeder competition for the next show circuit have been announced.

There would be a maximum 100 points for the entry of six steers with no more than four permanent incisors, and five heifers or cows with no more than six permanent incisors.

It has also been recommended that females be presented in the normal breeding condition. Both steers and females would be jointly considered and judged according to factors reflecting good management.

Carcasses of the six steers would be judged after they had been chilled for at least 12 hours. Only carcasses with an A fleshing index and Class 1 or 2 fat cover would be eligible while bruised carcasses would be disqualified.

MAXIMUM

Only carcasses over 210 kg hot dressed mass would be eligible for this competition. A maximum 10 points would be awarded to carcasses with a hot dressing mass of over 235 kg and points would be deducted for carcasses less than 235 kg.

Maximum points would be awarded for carcasses with 6 to 9 mm of fat thickness over the eye muscle fat, and more overfat carcasses would be heavily penalised, while carcasses with more than 15 mm fat would be disqualified.

The eye muscle area would be measured in square centimetres and points awarded according to an agreed scale allowing for differences in carcass mass.

Among the judges would be Ministry of Agricultural specialists: Dr Mike Gammon, Mr H. Barret and Mr C. Burness.

CSO: 5000/50

BRIEFS

RAIN THREATENS CROPS--Eighty percent of Zimbabwe's crops are being threatened by the late coming of rain. A fortnightly crop report of the Department of Agricultural, Technical and Extension Services issued today carries this assertion and says only about 20 percent of crops are in a fair to good condition due to the delayed rainfall. The report also says water supplies are running low in several areas of the country. [MB061918 Harare Domestic Service in English 1745 GMT 6 Dec 82]

CSO: 5000/51

PCB PROBLEM FOUND TO BE WIDESPREAD THROUGHOUT FINLAND

Helsinki HELSINGIN SANOMAT in Finnish 13 Nov 82 p 19

[Article: "Rescue Division Issues New Instructions for Accidents; PCB Is a Poison Common in Electrical Equipment"]

> [Excerpt] Doctor of medicine and surgery, Harri Vainio, is director of the Labor Hygiene and Toxicology Section of the Labor Health Establishment, and lecturer in physiology at Turku University. Electrical equipment containing PCB has frequently been involved in recent disasterous explosions in Finland and abroad. In addition to the PCB released thereby, these accidents are also capable of generating other extremely poisonous substances against which protection is vital.

More than 100,000 electrical condensers exist in Finland, and accidental explosions have revealed the dangers that they present. The fire-fighting and work safety personnel of industrial and real estate establishments need to attach special attention to the placement and condition of equipment that contains PCB in order to avoid future accidents.

Condensers and Transformers

The use of PCB compounds was begun in 1929 as coolants in transformers and as electrical insulators in condensers. The Oy Nokia Ab firm has manufactured about 100,000 condensers containing PCB for use in Finland. In addition, certain other electrical-equipment suppliers have furnished smaller quantities of condensers for use in Finland.

Electrical condensers are used in nearly all the largest development complexes, including those used for housing. The amount of PCB contained in the condensers varies, but it has been estimated at 1,000 tons.

PCB has not been used in condensers manufactured in Finland since 1978. The Oy Stromberg Ab firm supplied about 250 transformers containing PCB to Finland during the period from 1957 to 1977. The transformers generally bear a marking indicating the transformer fluid used (the trade names include Askaral, Clophen, Aroclor, Kaneclor to indicate PCB).

PCB Compounds in Nature

At the end of the 1960's it was indisputably demonstrated that PCB can be found almost through all living nature, including fish, birds, and seals in the Baltic Sea. However, PCB substances have never been knowingly discharged into the environment in the same way as pesticides, for example. They have found their way into the environment through evaporation of various compounds, unauthorized disposal, container dumping into the sea, and burial at dumping sites.

It is estimated in the United States that about on half of the PCB compounds that have been manufactured are still in use in electrical equipment, and that less than 4 percent of all the PCB compounds have been disposed of properly.

In Finalnd disposition of PCB wastes accumulating in condensers, for example, has been sought through shipment abroad for disposal. Shipment abroad has not always been successful, however, as the incidents of summer 1982 demonstrated.

PCB concentrations at the same levels as of DDT, another common environmental poison, have been detected in the fatty tissues of humans. Human mother's milk is also known to contain PCB substances.

Toxicity of PCB Compounds

PCB compounds were the cause of a catastrophic poisoning incident in Japan in 1968 in which more than a thousand persons became ill after eating contaminated rice.

The most obvious symptoms in the afflicted were vision disturbances, chlorifine illness, diarrhea, nausea, abdominal pains, swelling in the extremities, and eye inflammation. There was a rise in blood lipoids, disturbance in the functioning of the adrenals and of ovaries, and the immunological defense mechanisms of the system became disturbed. The PCB that contaminated the rice contained impurities, including polychlorated dibenzofuranes.

PCB compounds have caused cancer in experimental animals. According to the interpretation of the Cancer Research Center of the WHO, PCB compounds must be considered capable of causing cancer in humans as well, although undeniable proof based on population studies is lacking.

PCDD and PCDF are broad groups of substances which, particularly after the Seveson diozine accident, have received a great deal of attention. Some of the PCDD and PCDF derivatives, especially the so-called 2,3,7,8-isomers, are extremely poisonous. For instance, 2,3,7,8-tetrachlordibenzodioxine at this time is the most poisonous chemical synthetized by man.

The poisonous effects of PCDD and PCDF are complex. They may cause chlorifine illness, thickening of the skin (hyperkeratosis), liver damage, weakening of immune resistance, changes in the psyche, and disturbances in the metabolism of fats. Both PCDD and PCDF cause also malformations and cancer in experimental animals.

Accident Situation in Finland and Elsewhere

During autumn 1982 several incidents of condenser explosions in which the PCB was subjected to high temperatures have come to the fore. In addition to the gasification and dispersal of PCB compounds at temperatures at which explosions and fires occur, there is also formation of extremely poisonous "impurities." These "superpoisons" include chlorated dibenzodioxines, dibenzofuranes, and biphenyls.

Transformer fires and condenser explosions have previously been depicted as happening, for instances, in Sweden and the United States. The traces of a condenser fire that took place in Stockholm in August 1981 are still being cleaned up. An entire office building in the United States still remains unoccupied following a transformer fire in Feburary 1981.

The areas of accidents have been mapped by measuring tne amounts of PCB substances contained, and by determining the amounts of chlorated "superpoisons." The amounts contained in Finland have been noted as of the same level, or smaller, than those reported abroad.

Avoiding PCB Risks

Deplorably, good methods gauging the condition of condensers do not exist. The risk of accidents certainly decreases if overloading of condensers is avoided and if proper maintenance is observed. The possibility of accidents can be decreased by preventing leakages of PCB compounds, which also prevents the contamination of building interiors.

A letter from the Rescue Department of the Ministry of Internal Affairs dated in October 1982 gives instructions to fire and rescue officials in the event of a PCB accident. The instructions advise development complexes and industrial establishments to record the locations of their electrical equipment that contains PCB, which information is to be indicated also in the rescue and fire-fighting plans.

When an accident occurs in which PCB compounds have been subjected to high temperatures, the personnel must immediately be avacuated from the contaminated areas, the areas are to be closed off, and exchange of air into other, uncontaminated, areas must be prevented. The fire and work safety authorities must immediately be informed of the accident.

5955
CSO: 5000/2518

'CLOUD' POLLUTION DATA SHOW WORSENING SITUATION

Athens AKROPOLIS in Greek 28 Oct 82 p 10

[Text] Once again, the cloud over the center of Athens has been spreading its poison. The pollution of the last 2 days has been unprecedented--especially that of carbon monoxide and smoke, which gave values 800 percent higher than the internationally permitted limits! And the atmosphere of the capital was so hazy from the smog, and so many Athenians were forced to seek first aid because of heart and breathing problems that even the "relaxed" YKhOP [Ministry of Regional Planning and Development] itself was compelled to state: "The cloud pollution levels were in a very high range." And later on in the ministry's press bulletin pollution values are recorded higher even than those given by the measurements of the Panhellenic Center for Ecological Research [PAKOE], perhaps in consideration of the new traffic-control measures.

Breeze Had No Effect

The cloud's pollution levels were in the same range yesterday as well, despite the light breeze which was blowing. According to the announcement by PAKOE, the values of the "cloud" as taken in 2-hour measurements for the past 24 hours were: Smoke: Athens, 4.03 fm. m. [units unknown]; Piraeus, 3.8 fm. m. Airborne particulates: Athens, 861 micrograms/m^3; Piraeus, 645 mgr/m^3. Sulfur dioxide: Athens, 45 mgr/m^3; Piraeus, 134 mgr/m^3. Nitrogen dioxide: Athens, 215 mgr/m^3; Piraeus, 298 mgr/m^3.

And as is shown by the meteorological observations, no improvement is expected within the next few days.

In the face of this threat, the authorities have turned once again to the tried and unsuccessful traffic-control measures, showing indifference to the protests of the people and of the Athens Commercial Association. Thus, according to the decisions which have been announced up to now, beginning Monday: The movement of private and public vehicles is forbidden every day up to Friday from 700 hours to 930 hours within the famous "ring."

From Monday to Thursday, in the hours from 930 hours to 2000 hours, and Friday from 930 hours to 1500 hours, the measure on the alternate traffic of private and public vehicles (odd or even) is to be implemented.

In the first phase these measures will be in effect until 15 December.

According to journalists' reports, the implementation later on of a plan which includes even more austere measures is being studied!

12114
CSO: 5000/4704

THERMAIKOS GULF POLLUTION REACHES HIGH POINT

Athens I AVGI in Greek 3 Nov 82 p 2

[Article by Khr. Telidis]

[Text] Salonica--The problem of the pollution of the Thermaikos Gulf has assumed tragic proportions.

During the first day of the seminar organized by the Association of Chemical Engineers of Northern Greece, which is taking place from 1 to 14 November at the Salonica Polytechnic School on the subject of the treatment of liquid industrial wastes, some data were presented by Th. Angelidis, representative of the environmental group of the association. According to this data, an azoic zone has been created in the Thermaikos Gulf. In this zone all organisms have disappeared, and the substratum has undergone a radical change. Up to 1976 this had been limited to an area in the gulf where the wastes of the industrial park are discharged, whereas by now it has extended to the point where the outflow from the city sewer pipe occurs.

Furthermore, the broader zone of pollution, which in 1976 was limited to the shoreline area from the mouth of the Gallikos up to Mikros Emvolos, now covers all the northern and northeastern portion of the gulf as well as the estuaries of the Axios, Loudias, and Aliakmon rivers, which bring down sewage and wastes from a very broad region. In this zone the changes in the physicochemical parameters are significant, resulting in a decrease in the variety of living species of as much as 60 percent and an increase in the abundance of the resistant species. The zone below the natural shoreline covers almost all of the remaining gulf except for the deep waters in the open sea around Mikros Emvolos. In this zone, significant changes in the physicochemical parameters of the water and of the sediment on the sea bottom have appeared, and 10 to 20 percent of all living species has disappeared.

12114
CSO: 5000/4704

ENVIRONMENT AGENCY WARNS OF POISONOUS ALGAE IN LAKES

Stockholm DAGENS NYHETER in Swedish 17 Nov 82 p 5

/Article by Thorwald Olsson: "Toxic Algae Kill and Harm Animals"7

/Text7 The Environmental Protection Agency is now issuing toxic substance warnings against Swedish lake waters.

Large amounts of poisonous blue-green algae occur in at least three lakes. The poisonous algae have harmed and killed animals.

Humans can also be affected by the microscopic algae.

Research fellow Torbjorn Willen at the Environmental Protection Agency's Water Research Laboratory in Uppsala heads the study of algae. He says to DAGENS NYHETER:

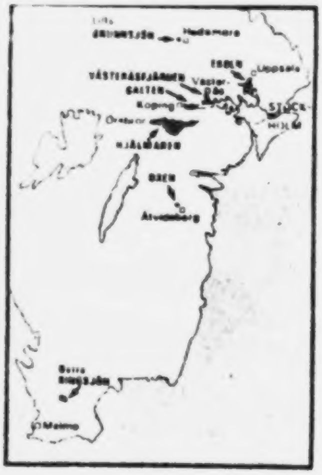
"We have finally received confirmation after years of uncertainty. The toxic blue-green algae, which bloom most profusely in waters rich in nutrients, definitely exist in Nya Ullevi Bay in Malaren, Ostra Ringsjon in Scania and the Oren lake outside Atvidaberg."

But it is to be expected that more waters are poisoned. Our study is only in its beginning and more analyzed results are on the way.

For nearly 100 years the farmers, above all, at regular intervals attributed animals deaths to the presence of blue-green algae.

After having drunk their fill of water in which blue-green algae were blooming, the animals became sick and died seemingly inexplicably. Humans have also long been affected by the toxic algae: allergy and stomach problems (the intestines are affected) are known symptoms.

Research fellow Willen says: "In Norway they achieved results more rapidly than here. When about 40 heads of cattle died last summer after drinking lake water with blooming blue-green algae, people in our neighboring country took a very thorough approach in their investigations."



The lakes included in the ongoing study of algae. The spreading of poison has been determined in three: Malaren, Oren and Ostra Ringsjon.

"The results confirmed what had been suspected and now we have also received the same answer in Sweden after having sent samples from a few lakes to the Norwegian Institue for Water Research in Oslo. And, as I said, we are expecting analyses of more samples."

The first samples thus came from Ostra Ringsjon in Scania, Lilla Ullevi Bay in Malaren and Oren outside Atvidaberg.

Next, information is expected concerning conditions in Hjalmaren, the bays of Ekoln, Galten (Koping) in Malaren, Vasteras Bay and Ullevi Bay (new samples) and Lilla Brunnsjon outside Hedemora in Dalecarlia.

"As early as the beginning of the 1970's cattle died after drinking the water of Ostra Ringsjon in Scania. The blue-green algae were blooming at the time," Torbjorn Willen further relates.

Lilla Brunnsjon is particularly interesting: In August the alarm was sounded that fish were suddenly dying in the lake. We believe it has to do with algae poisoning. The samples will tell.

Environmental experts accuse the sanitation departments and agriculture, among others, of sharing responsibility for poisoning our water plants.

"We even found symptoms on the west coast, and the fact that the lakes are poisoned is surely connected with the enormous overfertilization in agriculture and the discharge by the sanitation departments," in Torbjorn Willen's opinion.

A typical indication is that it is in waters rich in nutrients that the "poisonous blooming" of the blue-green algae are most commonly found. Consequently, the lakes of the agricultural regions are the most endangered.

Torbjorn Willen describes the sight which met him at Lilla Ullevi Bay in Malaren during sample-taking:

"The algae, which are microscopic, lay in a centimeter-thick, dark-red layer along portions of the beach. But this blooming was not worse than what I have seen before. The water surface can be blocked by a 10-centimeter-thick pulpy mass of rotting, foul-smelling algae."

The discovery of toxic algae in Swedish waters is only the beginning. The question is for how many decades the waters have been poisoned without any possibility of protecting neither animals nor people.

Drinking water is often taken from lakes.

Torbjorn Willen says: "One should not exaggerate, but humans can also be harmed, as has been shown in tests. Therefore, the municipalities should carefully monitor the waters from which drinking water is pumped."

A human can drink about 1 liter of algae-poisoned water before he suffers serious harm.

Symptoms have occurred in bathtubs as well: People taking baths have been afflicted by some kind of fever attacks. Water poisoning is suspected.

As regards fish, the risk is the same. The toxic algae in the lakes are believed to explain many previously unexplained cases of fish, bird and cattle deaths, as well as the symptoms in people.

Torbjorn Willen believes that confirmation of the presence [of toxic algae] should result in the initiation of a broad scientific project:

"Physicians, veterinarians and water plant experts should coordinate their resources," he says.

Torbjorn Willen also wants the general public to be alert. If anyone knows something which can be connected with the toxic algae, he should contact the Water Research Laboratory in Uppsala (Willen), telephone (018) 10 80 49.

11949
CSO: 5000/2519

VOLVO REQUEST TO INCREASE HYDROCARBON DISCHARGES DENIED

Stockholm DAGENS NYHETER in Swedish 12 Nov 82 p 14

/Article by Rolf Akerberg: "Government No to Volvo About Increased Discharge"/

/Text/ Goteborg, Thursday--On Thursday the government denied Volvo's request for an increase in the discharge of hydrocarbons from the Torslanda works. Volvo considered it necessary to increase the production of cars with metallic paint in order better to compete with MBW and Mercedes--which presumes an increased discharge of hydrocarbons.

The Environmental Protection Agency has previously expressed an opinion on this in agreement with the decision now taken by the government. In analyses made by Asst Prof Goran Petersson at Goteborgs University it was found that Volvo's discharges are measurable kilometers further away than previously believed.

The government expresses the opinion that through a combination of cleanup measures and production orientation Volvo should be able to keep the discharge down to the same level as today, that is to say 3,400 tons of hydrocarbons annually, as compared to the requested 3,900 tons. The government is also of the opinion that despite the denial Volvo has room for a certain increase in production over the next few years and that labor will not need to be laid off. On the contrary, under favorable conditions 1,800 new persons could be hired.

The government line is tougher than that of the Franchise Board for Environmental Protection. The board decided last year to permit the discharge of 3,400 tons of hydrocarbons but later agreed to 3,900 tons during a transitional period up to 1984.

In its argumentation Volvo stated that the company wants to increase its capacity of cars with metallic paint from 65,00 a year to 125,000. In percent this would mean an increase from 35 to 57. As a comparison Volvo referred to the fact that Mercedes and BMW have a metallic capacity of 80 percent.

Reduces the Discharge

At Volvo Ingvar Olofsson says that the company will undertake all possible measures to reduce the discharge and simultaneously expand the metallic capacity.

Over a 3-year period 100 million kronor will be invested in order to clean the discharge from the high-temperature furnaces, a measure described as the only one technically feasible today. This results in a reduction of the discharge by 300 tons. The discharge from the spray booths, which represents 90 percent, is impossible to clean up today--no automobile factory anywhere in the world has succeeded in that.

The first stage of the installation for cleaning up the hydrocarbon discharge from the high-temperature furnaces will be completed during the industrial vacation in the summer of 1983. Lines number three and four at the paintdivision of the Torslanda works will then get so-called thermal baking.

An advisory group with members from the county government, the Environmental Protection Agency and Volvo has been appointed and will work up to the turn of the year 1983-84 on seeking solutions to for example reduced spilling, new paints and new cleanup techniques. The group is also to follow the development in other automobile factories.

11949
CSO: 5000/2517

PRECIPITATION OF HEAVY METALS FROM ATMOSPHERE DECLINING

Stockholm DAGENS NYHETER in Swedish 12 Nov 82 p 14

/Article by Lasse Johansson: "Environmental Protection Agency: Reduced Precipitation of Heavy Metals"/

/Text/ The precipitation of heavy metals from the air is decreasing. This was shown by a study, Monitor 1982, done by the Environmental Protection Agency. It is primarily lead, cadmium and zinc which are decreasing noticeably, as shown by the results of the 800 tests on mosses from all over the country which have been analyzed.

It was in connection with the flourishing of the industrial society after World War II that an increasingly rapid stream of toxic substances was released into the air and water.

Heavy metals in large quantities were released into the air from combustion of oil and leaded gasoline. Both air and water had to accept a great deal of metals discharge from mines, steelworks and other heavy industries. Toxic organic substances were also spread in trying to control pests in forestry and agriculture.

In the 1960's one began to realize the danger, the laws were stiffened and an improvement is now beginning to show up. In 1975 and 1980 Ake Ruhling at the Institute for Water and Air Pollution Research did a survey of heavy metals in house moss and road moss gathered from the entire country during the national forest survey.

As expected, the study shows that most of the heavy metals occur in higher concentrations in southwestern Sweden than in other parts of the country due to the large amount of precipitation carried there by winds from the continent.

Despite that, the lead content in moss decreased by as much as 40 percent from 1975 to 1980. The lead discharge from cars declined between 10 and 15 percent during this time. The remainder of the decrease presumably depends on reduced lead discharge abroad.

In 1975 the cadmium content of moss from southern Gotaland, which was hardest hit, amounted to about 0.9 mg/kg (milligrams per kilogram). In 1980 the levels had dropped to 0.7 mg, and in most other places in Sweden a corresponding decrease has taken place.

Areas with high chromium and nickel levels have shrunk considerably. These pollutants previously existed in a broad belt from Gota River via Bergslagen to Gastrikland. The precipitation of arsenic, copper and vanadium was about the same in 1980 as 5 years before.

Plant Closings

The positive results can be seen as a direct result of the far-reaching discharge curtailment by the metals industry, the Environmental Protection Agency maintains in a press release. In addition, the widespread plant closings have played a certain role. But despite the improved results, heavy metals from many years are stored in the ground and in lake beds, toxic pollutants which can be released and reach the ground water, plants, animals and people, in particular if the acidification is allowed to continue at an undiminished rate.

11949
CSO: 5000/2517

BRIEFS

CYANIDE RELEASED INTO SEWERS--The greatest environmental scandal since BT Kemi in Teckomatorp is now unfolding in Fagersta. The Svensk Fotokemi company is accused of having released 110,000 liters of cyanide-containing water into the municipality's sewer system. The water contained an amount of poison which exceeded the permissible level 15,000 times. Four persons in the company's management risk indictment for violation of the environmental protection law, among others. According to the public health chief in Fagersta, the employees of the company have been working under a direct threat to their lives. /Text/ /Stockholm DAGENS NYHETER in Swedish 18 Nov 82 p 1/ 11949

5000/2519

OFFICIAL INTERVIEWED ON ENVIRONMENTAL POLLUTION

Istanbul TERCUMAN in Turkish 6 Nov 82 p 9

[Interview with Refet Erim, environmental undersecretary for the prime minister's office, by Taylan Sorgun]

[Text] [Question] Environmental pollution, which is gradually increasing, is a subject of concern in Turkey. Just as the issue was not given the necessary importance until very recently, measures taken from time to time were superficial and did not get to the essence of the problem. It has been demonstrated that pollution of fresh water sources and the seas does not only have negative effects on man's health, but also has adverse effects in the economic field. It can be seen that problems which require measures that have been put off have now become more difficult to solve, that new problems have erupted on their own. I believe that is is necessary to look at the issue using general guidelines first.

[Answer] Environmental problems do not recognize national or political boundaries. Pollution of the air, water resources, the sea which begins within the borders of a nation can spread to other nations. Environmental problems, which can be the result of affluence and development, can also occur because of a lack of funds in countries such as ours. It is necessary to set aside specific resources in order to combat it, but the lack of resources does not permit this.

[Question] In which of our regions is environmental pollution most evident?

[Answer] Environmental pollution, which is spreading, exists in various districts. This pollution is seen in the air, domestic waters, and our seas. Air pollution resulting from heating fuels is a problem in our large cities. However, because of meteorological factors, it is not felt to the same degree in every city. For example, Ankara, Erzurum, and Kayseri are the cities that suffer the greatest from air pollution. Errors in selecting sites for industrial organizations also have an effect on air pollution. The Corum cement factory, for example, was located outside the city when it was planned, but is now within the city limits because of rapid urbanization. Emissions that pollute the air are sent out right over the city.

Filters Knocked out of Service

[Question] Several measures to deal with air pollution from heating fuels have been proposed.

[Answer] Yes. There are means to do so. The first is to use better fuels, and the second is to burn the fuel more efficiently. A third is to use as little fuel as possible.

[Question] You talked about better fuels. Is it possible for Turkey to find better fuels?

[Answer] There is the problem of high costs for Turkey. We have planned to use better fuels in Ankara this year and to reduce air pollution by 50 percent.

[Question] What about the other cities you mentioned?

[Answer] A pilot program is being tested in Ankara. You asked whether or not we can provide the fuel secured for Ankara for other provinces. This is still not possible under present conditions. Coal resources are limited. Coke produces better results than lignite, but we are forced to use coke in industry as well. Furthermore, a certain amount must be imported each year. In this respect, this emerges as a restriction we must face when seeking to include delivery of this good fuel to other provinces.

[Question] Well, then, facilities to purify fuels have been established. Has installation of filters on chimneys been considered?

[Answer] Yes, two types of filters are being used. The first is an extremely simple process. Smoke rising within a restricted area is broken up by suddenly increasing the diameter of the area. The other is a system using electricity. Its cost is much greater.

[Question] But is it possible to employ a system that is electrical both from the standpoint of cost and because of fluctuating voltage?

[Answer] Power outages and voltage changes are having a great effect on the operation of filters we are attempting to utilize at industrial facilities in particular. We now have a mandatory filter system for all cement factories in Turkey. The Ministry of Industry and Technology is following up on this very seriously. But, as you said, voltage fluctuations do put these filters out of service. Emissions escape into the air during the time it takes to put the filters into operation again.

[Question] You spoke a while ago about pollution of our inland waters and our seas. There is also the problem of an important sewerage program for Istanbul about which the public still knows little. I wonder if there are aspects of this that are somewhat controversial.

[Answer] There are various causes of pollution of the seas. There are discharges into the sea from both coastal residences and from industrial facilities. Urban wastes can become biological wastes to a certain point, but industrial wastes remain in the sea as problematical wastes for a length of time. There is also the pollution resulting from maritime commerce. One element here is the transportation of petroleum by means of tankers. Problems occur during the loading and unloading process. Furthermore, tankers dump their bilge water into the sea. The Marmara complex, including Izmit and the Golden Horn, is faced with a serious problem in this respect and because of wastes resulting from industrialization and urbanization. It is also possible to speak of pollution of the sea at Iskenderun and along the Aliaga coast.

[Question] This pollution has an adverse effect on life we harvest from the sea. You just mentioned that tankers empty their bilge water into the sea. Let us take a look at a close example, at Istanbul. From time to time, the water of the Bosporus is covered with a layer of oil. Bilge water is dumped. Garbage is thrown overboard. I wonder if measures have been taken to combat this by other seaports.

[Answer] Of course they have. There are stiff penalties for ships that empty bilge water into the sea even once.

[Question] Then, haven't we set down penalties for this?

[Answer] In 1926, Ports Law No 618 was enacted. Under this law, a fine of the equivalent of 6,000 liras today was imposed for discharges that pollute the seas. A bill to increase this fine significantly is before Advisory Assembly commissions at this moment. If the bill becomes law, up to 10 million liras will be charged depending upon the amount of pollution produced.

[Question] In practice, how will it be determined that a ship dumped out its bilge water in transit?

[Answer] Other countries are able to control this. Coastal protection organizations have been formed. As you know, a coastal protection commandant has been established in Turkey. Harbor directorates will be able to carry out this supervision of ports from the air and at sea with the resources they possess, and the Coastal Protection Commandant will do the same outside the harbors. Other nations, however, do not stop with this. Other measures are also taken. For example, just as the city collects garbage from residences, waste-collecting boats are put into service. These boats collect the bilge water and other wastes from ships that load and unload at ports. Such a service will be included in the new law.

[Question] When will this practice begin? I am asking, because we make various decisions and pass laws, but they remain only on paper due to a lack of responsibility, a lack of resources. This has occurred with many things Furthermore, Turkey has no time to lose in this area. When will implementation begin?

[Answer] You are correct. Turkey has no time to waste on this topic. It is certain that this bill, which was introduced in March 1981, must be passed at once. If it had been passed earlier, we would have gained a year of time. Despite this, I am not pessimistic.

[Question] I asked you when.

[Answer] If the law is enacted this year or during the first months of next year, it will begin to be enforced and fines will begin to be imposed within a year. However, the necessary equipment would be available at ports at the end of 1983.

[Question] Very well, then. For how many years has this been going on? For a long time, the Istanbul Bosporus has been swimming in all this filth.

[Answer] It has been going on for at least 15 years.

[Question] Why, I wonder, haven't measures been taken for 15 years?

[Answer] I am not qualified to answer that. However, in every country, certain problems must reach critical proportion, unfortunately, before they are able to be solved. It is expected that this will reach unbearable dimensions. It takes time for the public to become conscious and for the decision-making mechanisms to be put into action.

[Question] You are correct in one respect. A new form of pollution has also been seen recently. In addition, the carcass of a huge ship has still not been able to be removed.

[Answer] Yes, the recent pollution is from the Independenta, which burned and sank close to the straits when coming to Istanbul from the Black Sea. The pollution spread as far as our inland waters. As I said a while ago, this is an example of how the problem of pollution has no boundaries.

If we return to the debris in the Bosporus, the fact that that ship's remains are still there is an international disgrace. Unfortunately, peacemaking negotiations with the nation that fitted out this ship have not produced results to date. In fact, this task should not have gone on this long, but the nation that owns the ship has been unable to meet our reasonable demands on this issue, because it has been unable to resolve relations with its own insurance company in the required manner. Let me only say that we will be able to have the opportunity to be paid equitably for our loss before the end of the year -- in December, in other words -- by reaching an agreement with the firm that owns the ship through cases that have been initiated.

[Question] Can you give a final figure?

[Answer] A case has been opened for part of the money. Because some claims were uncertain, we are also pursuing this at the executive level. The figure we are demanding, I believe, amounts to 20 billion liras. We are also seeking an amount close to this through executive channels.

[Question] There was a controversial sewerage project for Istanbul.

[Answer] It is not possible to say there is a serious sewerage system in Istanbul, which has 5 million residents. Besides the wastes that enter the sea, there is the danger of leakage into drinking water sources. A sewerage system project was drawn up for Istanbul by a firm by the name of Damok with credit obtained from the World Bank. The World Bank claimed that, in order to carry out this project, it would be appropriate for a separate organization to deal with Istanbul's water sewerage problem. Therefore, we established an organization we call ISKI [Istanbul Water and Sewerage Office]. Bids for contracts related with collectors will be sought in the months ahead.

[Question] As far as we know, wastes will be dumped into the Marmara Sea under this project. Can we be sure that no problem will result from this?

[Answer] You have brought up a debatable subject. We have serious concerns about this issue. In accordance with the project, Istanbul's wastes will flow directly to the Black Sea from eight different points by way of underwater currents. Studies that were made, however, show that these subcurrents in the Marmara do not extend as far as the Black Sea. In that case, there is the possibility that the wastes emptied into the sea will surface somewhere in the Marmara. When the Northern Seas Regional Commandant and the Istanbul Martial Law Commandant called attention to the problem, the topic was taken up at the national government level.

[Question] What you speak of are measures for the future. Incorrect applications are seen today among us. When industrial installations are established, purification units are not built at the outset because of reluctance to spend 300 million to 500 million liras. Later, the costs rise to 5 billion liras. In addition, there are everyday problems. The Istanbul coast, the Aegean coast, the Mediterranean coast are garbage dumps. There is probably no need for a national law here. A solution can be reached through local measures but, for some reason or other, nothing is being done.

[Answer] Yes, you are correct. In countries like ours, added expenses are avoided when building industrial facilities. It is necessary that economic problems not be ignored, but this situation, as we said before, causes trouble in later years for both the nation and facility. Turkey began to take an interest in this in 1930. Under the Hygiene Law, facilities that are, by nature, polluting are not allowed to be established within city limits. The result, however, is evident. I am not saying this to criticize the past. But it is the truth. There is, for example, Kazlicesme.

Kazlicesme and the Golden Horn

[Question] When cars pass through the area, windows are rolled up. People hold their noses when going through. But it does no good. A study in which measurements were taken was made in Kazlicesme in 1965. The conclusion of the report that was issued said this -- the place is unfit for human habitation. However, it still remains the same. In fact, it is even worse now. We have been dragging our feet for years even about this little problem.

[Answer] It is well that you did not ask me this question when we met previously and that you have asked it now. If you asked then, I would have been forced to bow my head in shame. In the very near future, prefabricated purification facilities will be transported to Orhankoy on the Tuzla ridge.

[Question] And have you distributed pictures of the Golden Horn to the four corners of the world as tourism publicity?

[Answer] Work is being carried out on this topic. There are two issues related to Istanbul on which our prime minister has placed emphasis. One is the Golden Horn. The other is Kazlicesme. The last day for the move of the privately owned dockyards in the Golden Horn is 15 November. Thereafter, the area will be planted with trees, and other work will be undertaken. You mentioned that the coasts are like garbage dumps. Looking at it practically, this problem can be solved. Rauf Tamer wrote, "If bureaucrats will not utter empty words about air pollution, I will not be concerned with the constitution and such things." The problem is one of consciousness. It has become habit to throw garbage into the sea. In addition, it has become customary not to collect garbage from homes along the seacoast. After the vote on the constitution is taken, a meeting with Marmara coast governors and municipal chairmen will be held in Ankara.

[Question] Thank you, Mr. Erim. Let's talk again about implementation.

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